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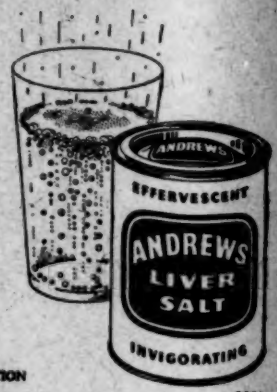

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BRITISH MEDICAL JOURNAL

LONDON SATURDAY MARCH 12 1955

MEDICINE IN RELATION TO SOCIETY*

BY

A. E. CLARK-KENNEDY, M.D., F.R.C.P.

Physician to the London Hospital and Fellow of Corpus Christi College, Cambridge

On a famous occasion in the House of Commons in the reign of King George III a certain member, Mr. Dunning, moved that "the power of the Crown has increased, is increasing, and is likely to increase still further." To-day, at the opening of the 218th Session of the Royal Medical Society, I would remind you that "the power of medicine has increased, is increasing, and is likely to increase still further." For what is the position? We can now prevent birth, terminate pregnancy, relieve pain, keep unconscious for long periods, prevent and treat many infections, suppress and increase instinct, modify the reactions of the mind with drugs, and influence personality with the knife. We can certainly prolong life. One day we may discover a chemotherapy for cancer and how to slow down the degenerative processes of age.

Mr. Dunning went on to move that the power of the Crown "should be reduced." I do not suggest that the power of medicine should, but, while the general public are acutely aware of the problems recently raised by the discovery of intra-atomic energy, they and many members of our profession remain largely unaware of the more personal ones which are being rapidly precipitated by our increasing power over the physico-chemical machinery of the human body, the basis of the individual life and mind. How, when, and to what extent should this increasing power be used? I am therefore asking you to consider, not medicine as a science (about which I sometimes think we hear too much), not even medicine as an art (about which I think we now hear too little), but the growing problem of the right use of the power of medicine in relation to Society. And how is that to be solved to the best advantage of humanity? Surely by establishing and maintaining satisfactory relationships between the three chief interested parties: the patient (you are all potential patients); the doctor (you will all soon become doctors); and the State, in which in this democratic country we are all incorporated by virtue of our votes.

The Patient

Let me begin with the patient, or rather with the potential patient, who at any moment may develop his disease, the average man who often knows or thinks he knows a little about medicine. What is his outlook to-day? Naturally he still expects his doctor to keep him and his family in health, but, as a result of increasing medical knowledge and specialization, his attitude to his doctor has changed considerably of recent years. Further, it has changed at a time when the influence of the Churches has declined (although religion still sometimes complicates a medical problem), most people live in a structureless urban or dormitory society, the State has become responsible for health, and legal aid is available to all. He is aware that his doctor now knows relatively much less about medicine as a whole than he did a few years ago. (Hence his growing faith in specialists and his doctor's declining opportunity to become, as he so often became in the past, his patient's guide, philosopher, and friend.) On the other hand, does he, the average patient, understand that the most responsible and often most difficult diagnosis is still that between the early symptoms of organic disease and those of functional or psychoneurotic origin? (Whether to investigate or treat symptomatically may be a decision entailing life or death.) Does he realize that health is a relative term in relation to the constitution with which he is endowed; that avoiding the disease to which he is predisposed may depend on deliberate effort on his own part; that in seeking the aid of the growing power of medicine to live longer he may merely add to the total suffering which he must endure? Further, he still expects his doctor to maintain the principle of professional secrecy and protect him from exploitation at the expense of his health by his employer or the State, which, in these days of nationalized industry, is often his employer. And yet it is to the State that he looks to provide him with living conditions compatible with health and to protect him from the risks to which he is exposed in an industrial society. In addition, he now relies mainly on the State, and no longer on Church, charity, or some voluntary organization to which he subscribed, to restore his health when he is ill and look after him in his old age. But does he realize that elimination of risk demands some sacrifice of personal freedom and that State intervention in medicine tends inevitably to cut across the principle of professional secrecy?

The Doctor

Now for ourselves. On the one hand, we have a much clearer idea of the nature of disease than in the recent past, although we are faced with a much more difficult concept. For we no longer think of diseases as entities with characteristic symptoms and signs and definite dividing-lines between them. Rather the phenomenon has become to appear as a continuum like a mountain range in which the textbook diseases stand out like major peaks. (The outlook of the recently qualified doctor is very different from that of one of the older generation.) On the other hand, we

*The inaugural address delivered at the opening meeting of the 218th Session of the Royal Medical Society of Edinburgh

are all painfully conscious (even more so than our patients) that, as medical knowledge marches on relentlessly, we individually know relatively less and less about medicine as a whole. And what are the consequences of that? Some loss of confidence in ourselves and being forced into specialization or, if we attempt to remain general, greater reliance on specialists. (In some countries the general practitioner, as we know him, has almost disappeared.) Further, the growing power of medicine has not simplified practice, as the layman naturally supposes. Rather it has rendered it much more difficult and created many more opportunities for us to make mistakes.

When I first started, there were few diseases for which any radical treatment existed. Early diagnosis was often unimportant. All we could do in so many cases then was to treat symptoms and let the underlying pathological process run its natural course. Now something can be done for so many that early diagnosis is becoming increasingly necessary. For example, until chemotherapy for tuberculosis was discovered, all cases of meningitis of that variety died in a few weeks: the later the diagnosis in many ways the better; the shorter the period of agony for relatives. Now, if the disease is diagnosed early, modern treatment will effect a complete cure: if late, the patient dies or, worse still, is left a derelict for life.

Further, in spite of all our new methods of investigation, "front-line" diagnosis remains clinical. Laboratory tests and *x* rays have not replaced history-taking and physical examination except perhaps in hospital, where the decision whether to investigate or not and what to start investigating has already been made by a general practitioner or in the out-patient department. And clinical diagnosis is still that which is most probable on the evidence immediately available, although there is often a less probable but more serious condition which, if sufficiently probable, must be actively excluded, provided that it is likely to be amenable to treatment. (There is no sense in causing discomfort and wasting public money in excluding some disease which is bound to be incurable.) So the general practitioner and the out-patient physician, unless they are to submit every patient to a whole gamut of expensive investigations, are compelled to take risks. Indeed, they take them every day, clinical diagnosis (although we may be loath to admit it) exemplifying the economic law of diminishing returns.

Let me give you an example. Carcinoma of the stomach and colon are symptomless diseases at first and the patient does not consult a doctor until the compensatory reactions of his body start to fail. Then in 75% of cases, I suppose, symptoms are sufficiently definite to permit a highly probable clinical diagnosis. Further, by exercising extreme care (mainly in history-taking) we can probably "get" the next 20% without investigating too many "functional colons" and "nervous dyspeptics." The remaining 5% are however, I believe, likely to defeat us and must be written off on the balance sheet of human suffering like a bad debt. Indeed, unless we are courageous in diagnosis within reason, we shall cause so much unnecessary anxiety that we shall undo much of the good which we otherwise succeed in doing, quite apart from wasting public money. True that an *x*-ray film of the chest every quarter, for example, might one day become an economic proposition, but routine investigations of the kind which would eliminate diseases such as carcinoma of the stomach and colon must, so far as one can see at present, remain outside the realm of practicability.

Some Moral Problems

In addition, as the power of medicine increases, we are all confronted, and confronted particularly often in hospital practice, by problems of a moral nature. Under what circumstances should birth control be advocated? When should pregnancy be terminated? To what extent should pain be relieved? When is it right to use drugs to suppress or increase instinct? To what extent is it justifiable to alter the reactions of the mind to experience such as the advent of death by means of drugs? When should leucotomy be performed to render a patient socially more manageable and a lesser burden on society at an expense in terms of mind which it is impossible to estimate? When should life be prolonged at the cost of increased suffering by some palliative operation? For example, when should gastrostomy be performed in inoperable carcinoma of the oesophagus or colostomy in inoperable carcinoma of the colon?

And again and again I am confronted with this sort of problem. An elderly man is admitted with hemiplegia and aphasia, lies there semi-conscious, and after a few weeks shows little sign of recovery. Then his temperature and pulse start to rise and signs appear at the bases of his lungs. Clearly he is heading for pneumonia, Osler's one-time "master of the men of death." Do I put him on penicillin and prolong his misery, or on morphine and let him depart in peace? "His nearest relative should decide": it is easy to say that, but in situations of this kind can they really be told enough to understand the position sufficiently clearly to arrive at a decision? And how many relatives are capable, under the emotional stress of circumstances such as these, of decisions of this magnitude? In my experience most patients and relatives want decisions taken for them rather than to be left to take them for themselves. Further, if they are forced to take the decision themselves, does not the one which they take depend on the way the situation is explained to them? In practice the doctor is almost always faced with taking the decision himself.

Now, it is always easier to perform a palliative operation or put the patient on deep *x*-ray treatment or chemotherapy; easier, in fact, to do something than to do nothing. Some course of action will probably relieve his immediate symptoms, and often it prolongs his life. It will raise hopes and sometimes clear the bed for the admission of another case for whom more might be done. But what happens to the patient in the end? Looking back, would not analgesics and narcotics often have been better treatment, although the bed might have been blocked for weeks? (The use of drugs to relieve pain, even to the extent of keeping a patient unconscious for a long period, in my experience does not shorten life and is not euthanasia.) The Roman Catholic doctor in dealing with his Roman Catholic patients has firm guidance from his Church in these matters, and some may hold the view that it is always our duty to prolong life so far as is possible, but my experience teaches me that most of the non-Catholic laity would, if they knew the truth, wish doctors to exercise more moral courage than in point of fact is, I think, their practice in these situations. If the patient or his relatives really could be told the facts, they would have their doctor withhold treatment when "the game is up," and let nature take its course. But so often they cannot understand or be brought to face the decision, so that again and again in practice most of us are forced to act on our own sense of what is right in the circumstances of each case. But to that statement I hasten to add this rider. In general we should base our action on what appears to be (and we must always take the trouble to find out) our patient's philosophy of life rather than inflict ours on him when he is ill or dying. (The outlook of a man of 40, be he doctor or patient, may be very different from that of a man of 60.) It is written "Thou shalt not kill." But letting nature take its course when nature cannot be stopped is not killing. Nor in my judgment is a patient committing suicide when he refuses palliative or problematical, as opposed to a reasonably certainly curative, medical or surgical treatment. Never before in the history of medicine has it been so important to remember Clough's oft-quoted rider to the sixth commandment: "But needst not strive officiously to keep alive."

More difficult still is the decision whether to adopt a procedure which *may* arrest a lethal pathological process *possibly* only at the cost of leaving the patient a mutilated relic of his former self: for example, deciding whether to operate for a tumour of the brain. It may be that in a particular case there is a one-in-four chance (so far as

chances can be estimated) of a spectacular success and a one-in-four chance of the patient dying. If the choice lay between those two alternatives alone, there would never be any doubt of what to do. But there may be even chances of leaving him derelict for life. If the patient realized that, would he consent to operation? Yet it is seldom possible, and it is doubtful if it would be right if it was possible, to explain the position to him. So these decisions remain for us to take, and are most difficult. Further, they must remain individual. It is impossible to generalize. It is no platitude that the doctor should treat his patient and not his disease. Rather that is the first principle of medical practice. The disease, that complicated reaction between the psychosomatic constitution of the individual man and the risks to which he has succumbed, is the abstract concept. The patient is the concrete reality. There can be no disease without a man, woman, or child to suffer from it, any more than there can be a human mind, as we know it, without the physico-chemical machinery of a human body to maintain it. If I really thought that I was either under a moral obligation to keep all my patients alive as long as possible, or under a legal obligation always to apply the textbook treatment for the textbook disease, I would give up medicine to-morrow!

Responsibility for Major Decisions

Now, in actual fact by whom are these major medical decisions usually taken? Almost always, I think, by the physician or surgeon under whom the patient has been admitted to hospital, and who, although he is often a specialist in some particular branch of medicine or surgery, seldom knows much (because in his position he cannot) about the background of the patient's life. Further, they are usually taken without reference to his general practitioner. Indeed, to-day he seldom "comes into the picture," except in so far as the medical fate of a patient may depend on the specialist (Dr. X or Y or Mr. A or B) to whom he is referred in the first instance. A duty of every general practitioner is to "know" his specialists and choose that one most suitable to advise his individual patient. But the gulf of loss of contact between specialist and general practitioner has grown wider and wider of recent years, and, as things stand at present, the responsibility of the latter for any major decision ends completely in most cases as soon as his patient is admitted to hospital. Nor am I altogether happy about responsibility in a large hospital. For a patient may be attending several departments simultaneously. His G.P. has been "cut out" and no one doctor is now primarily responsible for him. Further, we seem to be developing a race of laboratory middle-men who now sometimes dominate the investigation of a patient, and therefore come to influence his treatment, and yet must know less than anyone else of the background of his life. As I see it, all major decisions in respect of a hospital patient, whether to investigate, how to treat, and above all the vital decision whether to treat, should be taken by one physician or surgeon who should be responsible for ascertaining the background of his life by getting in touch with his general practitioner.

Divided Loyalties

The problem of divided loyalties also bothers me. By the tradition in which our profession has developed, and we ourselves have grown up, our allegiance is still primarily to our patients. I say primarily deliberately, because we have two other allegiances. On the one hand, we have an inclination always to get as near the truth as possible, the scientific approach determining the pattern of medical education to-day. On the other, we have a feeling of duty to the State. True that the latter is not very strong in our minds, anyhow as yet, but duty sometimes calls awkwardly in that direction. For practically all doctors are now full- or part-time servants of the State, or, if you prefer it, of the public embodied in this democratic country in the State. Further, we are now entrusted, both in domiciliary and in hospital practice, with the expenditure of public money. Now, at one time there were no expensive methods of diagnosis (sometimes to be proved or disproved on the post-mortem table), so that these three loyalties seldom came into collision, and, when modern methods of investigation started, we spent the patient's money, or money subscribed by the charitable or contributed voluntarily by him to a society. To-day, not only are investigations far more numerous and expensive, but they can be used to paint a much more complete picture of a disease. Sometimes this must be painted in all its details. But how often do we order investigations (apart from planned research) merely to paint more completely the picture of a disease for which nothing can be done; or, to state it crudely, how often do we spend public money merely to satisfy our own intellectual curiosity? Nevertheless, curiosity is necessary if medicine is to feel its way and each of us individually is to continue learning. The conflict of interests exists, and it is better to realize it. The only solution lies in compromise.

The State

Now for the State, the latest comer on the scene. Indeed, it is a very recent comer. It is less than 200 years since the importance of environment in the pathogenesis of disease began to be understood, and only in the memory of living man did the cost of treatment become so great that Church, charity, and voluntary organizations could no longer cope. Lloyd George's National Insurance Act was introduced just before the first world war, and Mr. Bevan's National Health Service Act just after the second. Further, in the modern world, every State has begun to take a positive interest in health for two reasons. In peace the labour force must be maintained. In war the Services must be kept up to strength. The State can no longer sit back and look on. It must intervene, and intervene with the maximum economy compatible with efficiency. So medical administrators, with financial considerations always "treading on their tails," would gain complete control of medical certification and expenditure if they could. Further, State medicine is impersonal. It thinks in terms of numbers and percentages, not in terms of individuals, dislikes professional secrecy, and would have all the information about the incidence of disease which it can get.

The State has three main functions in relation to health. First it must reduce to a minimum those risks which are prejudicial to human existence. It must therefore take responsibility for housing, water, and sanitation and enforce regulations to minimize the traumatic and chemical risks to which people are exposed in an industrial society. As to these functions of government there can be no controversy.

The control of infection is a more difficult problem. Vaccination against smallpox and inoculation against diphtheria are not compulsory, because some people have conscientious scruples against them. The State accepts these scruples (in the same way as it accepts conscientious objection in time of war), although both are actively discouraged. If, however, a patient develops smallpox or diphtheria he has no choice in the matter. He is bundled off to a fever hospital. Tuberculosis we handle differently. The patient must be notified, and is then kept under observation and encouraged to undergo treatment, but he cannot be compelled to enter a hospital or sanatorium. Public opinion would not stand for treating people with chronic tuberculosis as lepers were treated in the Middle Ages, although patients with open lesions must be almost as dangerous. Venereal disease is not even notifiable, but the State sees that facilities for treatment are easily available. Thus we compromise between eliminating risk and sacrificing freedom.

The third function of the Government is now the organization of the medical services, and as the result of the National Health Service Act doctors are becoming distributed more equitably in relation to population, the standard of medical care has been raised in many areas, and special centres are growing up where previously they did not exist.

The best medicine has not become available to everybody (there is never enough of the best to go the whole way round), but the National Health Service has brought good medicine within the reach of all. It is a great advance in social legislation, but there are difficulties and dangers inherent in the new system which it would be folly to ignore.

The State looks to the doctor not to spend public money unnecessarily. It does not expect him to waste it either in the satisfaction of his own intellectual curiosity or in acquiescing to his patients' unreasonable requests. In most cases expenditure is justified, but there are difficult cases. For example, when is an *x*-ray examination justified merely to convince a patient who doubts a purely clinical opinion? When is the more expensive drug justified which might do the patient just a little more good? When is physiotherapy really worth the cost of repeated visits to a hospital? But I am not suggesting that problems of this kind are new, still less that they are the result of the National Health Service. (That started at a time of economic stress and rapid progress in methods of diagnosis and treatment. Medicine was becoming so complex that the State was compelled to take over.) Rather, they have assumed larger proportions and become more difficult because, now that they are servants of the public, it is not as easy for doctors to be firm as when they gave their services to hospitals in an honorary capacity and were paid fees which they could refuse or remit. The man in the street, whatever his politics, held charity and, whatever his religion, the Church, and naturally the society to which he voluntarily subscribed, in some respect. But the State is often fair game, and he may claim the right to be investigated or treated in a certain way or given a certificate to get him this or protect him from that. The unpalatable truth is that the hospital doctor who did his work unpaid, and the consultant or general practitioner who worked for fees, have both to some extent lost the throne of freedom of action on which they used to sit.

Further, there is this added danger. If a doctor makes a mistake (we must all make mistakes sometimes), a patient is much more likely to sue him or his hospital now than in the recent past. As paid servants of the public, we are a tempting target for that dangerous few who have a "down" on the profession and enjoy publicity. Nevertheless, I am not suggesting that the recent spate of litigation against hospitals and doctors is due to the National Health Service, or that in general our patients are any less grateful than they were before it started. Rather, it is the consequence of the general public thinking that they now know so much more about medicine (when in reality they know much less), our much greater opportunity to make mistakes, and legal aid becoming (if a reasonable case for it exists) accessible to people with small incomes. True that we are probably passing through a transient spate of it, but there has been enough to tend to make doctors play for safety to a greater extent than safety should be played for. And what are the likely consequences of that? To the patient, unnecessary discomfort and loss of working time. To the State, loss of output and additional cost to the Health Service.

A further danger to the happiness of the doctor–patient relationship (on which successful medicine so much depends) is the inevitable tendency of the National Health Service to undermine the traditional principle of professional secrecy. For these are the days of reports to employers (often the State) and copious records. Hospital notes are bandied about from hospital to hospital by lay secretaries and must be produced in court if demanded. The patient's record card changes hands through a central office whenever he changes his doctor. Can that too be demanded in court? Has the patient the right to insist that it or his hospital notes be destroyed? I do not know the answer to these questions.

The cost of the Health Service is, as everyone knows, steadily increasing (it is doubtful if there can be any natural limit to expenditure on health), but this is in no way due to the Service itself. Rather, as I have already emphasized, it is due to present-day economic conditions and recent advances in expensive methods of diagnosis and treatment (which together rendered the Service necessary), and, I should add, the increasing age of the population (one of the results of modern medicine) and the higher cost of keeping old people alive (as the power of medicine increases). Economy is clearly necessary. There are already directives intended to reduce the cost of prescribing in domiciliary practice, and we are repeatedly implored to cut down *x* rays, expensive investigations, and the use of costly drugs in hospital. Further, it would certainly be more economical to run hospitals with a smaller number of full-time consultants than on the present half-time system. Indeed, if we let medicine get too expensive—and that rests to some extent with doctors—the National Health Service, which retains at present most that was best and has eliminated most that was worst in the old system, might be forced into the pattern of a full-time salaried medical service. And what could that be like? The allegiance of the doctor might become primarily to the State. Promotion might become based mainly on service to it rather than to the patient for which the service was intended. In the interests of economy some forms of treatment might become standardized and the progress of medicine thereby hindered.

Further, a State medical service might lead to an orthodox State medicine. But even under the National Health Service as at present organized I sometimes think that we are nearer to it than is generally realized. There is a movement to limit prescribing and reduce expensive investigations already. True that there have been no directives regarding treatment as yet, but no patient can get free homoeopathy, osteopathy, or faith healing under the Act except from a legally qualified practitioner. True, also, that at present we are free to act as we believe to be right in the circumstances of the individual life, and that Common Law holds that a doctor cannot be found negligent if he has exercised all reasonable care in diagnosis and treatment. But suppose a doctor takes the view that it is right in certain circumstances to withhold treatment and let a patient die, and is then sued by his relatives. What then? I do not think that a case of this kind has been taken to court, but, unless inaction of this kind in certain circumstances is upheld, if a case does come to court, doctors will be afraid to let nature take its course in certain circumstances, adding vastly to the sum of human misery. The rising expense of the Health Service and the growth of Common Law might between them force the orthodox medicine which we have at present into a dangerously rigid system.

Basic Principles

Three principles stand out to keep us straight.

1. The patient must remain free to choose his doctor and change him when he feels inclined. That principle has long been conceded, and is an integral part of the Act of Parliament on which the National Health Service is founded. It is Statute Law.

2. The doctor must be free to treat his patient as he thinks right, and feel confident that he will be upheld in court if, after all due consideration, he decides to withhold the textbook treatment for the textbook disease, thinking that under the circumstances it would serve no useful purpose or merely prolong suffering. This principle has not yet been established.

3. The nature of medical practice is such that the State must continue to control medical education indirectly through the General Medical Council and the medical schools of the universities, but they must not have direct power over methods of medical treatment. It must achieve economy by suasion rather than directives. It must continue to organize the medical services, but it must never command individual doctors. Under no circumstances must the growing power of medicine be handed over to committees or vested unfettered in the State.

Conclusion

After thirty-five years in medical practice I have attempted (I am afraid in a very muddled way) to paint a picture of a peculiarly difficult problem in human relationships—namely, the triangular one between the patient, the doctor, and the State. A perfect solution depends upon an agreed philosophy of life, but unfortunately that does not exist. Compromise is therefore essential. Now I must have said much with which you will not agree. I may have made statements which you positively dislike. You may think that I have painted the darker corners of medical practice in too sombre colours. But I have raised questions which must be faced. True that I have given you no answers to any of them, but I venture to hope that I have helped you toward a better understanding of the problems being raised by the power of medicine which, to adapt again Mr. Dunning's famous motion in the Commons, "has increased, is increasing and is likely to increase still further.

THE CANCER PATIENT: DELAY IN SEEKING ADVICE

BY

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Cancer of the breast, cervix uteri, skin, or mouth usually presents symptoms which a patient can recognize and for which early successful treatment is a practical possibility. Yet of 2,700 patients attending this hospital with cancer in these sites 45% had delayed consulting their doctor for three months or more, and 17% for a year or more, after the onset of symptoms. This article describes a study of factors which influence people with these cancers to delay seeking advice. The study is based on the interviewing of a series of 75 men and 239 women patients and their relatives, resident in Manchester, Salford, and Stockport, and attending this hospital. All the interviewing was carried out by one person (J.A.-S.).

Interpretation of facts obtained by these means is inevitably subjective. Sometimes more can be learned in a few minutes from a relative than from several interviews with the patient. Conclusions are not based, therefore, on the patient's statement alone, but on all the evidence available. In addition, 63 patients were tested by the Wechsler–Bellevue method of intelligence testing to ascertain the relationship between individual I.Q. and delay.

Early in the study it appeared evident that there were two clear-cut groups of patients: (1) those who "knew" they might have cancer, and (2) those who were genuinely ignorant of the possible significance of their symptoms. The mental processes of these two groups are entirely distinct. Nevertheless, it was sometimes far from easy to place individuals into the correct category, especially as those in the first group often tried to hide the truth. The degree of awareness of a symptom, and the extent to which people will consciously accept what they suspect to be the truth, are dependent on personal factors. Shands *et al.* (1951), describing three levels of knowing, say: "(1) A person may be in the possession of a number of facts that are not related to each other; he may know, for instance, that 'a lump may be a cancer,' and 'I have a lump,' without arriving at the conclusion, 'I may have a cancer.' (2) He may have taken the initial step of the relationship but stops short of translating the insight into action. . . . (3) A third level of knowing is that characterized by the integration of the pertinent information into the behavioural patterns of the individual."

In the present study a patient is considered to have known if there is evidence that at any level she thought of cancer in relation to her symptoms before consulting a doctor. Patients who "knew" can be subdivided according to a characteristic positive or negative response—those in whom fear is the dominating factor, and those who fatalistically accept the situation and mean to do nothing. The former group may offer a series of superficial reasons for their delay, and some of these are discussed later. Basically, these patients are motivated by fear, and their actions, wise or unwise, represent response to fear. As will be seen, fear may result in immediate action, as it ought to, but more often it leads to an only half-conscious policy of concealment and appropriate rationalization. The latter group, usually older people, are well adjusted to the situation which they do not deny.

Where there is genuine ignorance clearly no such factors operate, and delay, if it occurs, represents a normal response to the problems of health and illness which would take place regardless of the type of disease. At this point it may be noted that if education masters ignorance it may only result in a transfer to the other category.

It appeared later that the fraction falling into the two categories of "knowing" and "not knowing" varied greatly with the type of cancer, category 1 being dominant for breast cancer and category 2 for cancer of the cervix, skin, and mouth. This is, of course, an important finding in regard to the placing of emphasis in any educational campaign.

The average length of delay and numbers delaying three months or more are significantly higher among patients who knew than among those who did not know. This is not to say that they necessarily all delayed because they knew. Naturally, delay is also influenced by the degree of inconvenience suffered. The figures may therefore also reflect the fact that, generally, cancer of the cervix and mouth present troublesome symptoms earlier than cancer of the breast or skin.

Table I sets out an analysis of the whole material divided with as great accuracy as possible on these lines for the four diseases under review. In 19 cases it was impossible to determine on the evidence available whether the patient "knew" or not.

Action Related to Ignorance

Where the first symptom was not a lump in the breast women with breast cancer were apt to mistake the possible significance of their symptoms. Enlargement or swelling of the breast, a lump in the axilla, or retraction of the nipple was genuinely attributed to old lactation difficulties, menopausal disturbances, or recurrence of previous complaints. Even where the first symptom was a lump, in some cases the history was long and the lump unchanging. In addition, some put off through apparent indifference about their symptoms. They did not think the condition important, and allowed it to drag on owing to pressure of other events, and possibly low health standards and a low level of intelligence.

TABLE I.—*Delay of Patients who Knew they had Cancer and those who did not, by Site of Disease*

Site	Total	Knew	Did Not Know	Indeterminate	Delay								
					Under 3 Months			3–12 Months			12 Months and Over		
					Total	Knew	Did Not Know	Total	Knew	Did Not Know	Total	Knew	Did Not Know
Breast	127	92	31	4	52	32	17	36	27	9	39	33	5
Cervix uteri ..	80	18	51	11	47	9	32	22	4	15	11	5	4
Skin*	62	8	52	2	30	3	26	12	0	12	20	5	14
Mouth	45	8	35	2	26	3	22	12	5	6	7	0	7
Total ..	314	126	169	19	155	47	97	82	36	42	77	43	30

* Squamous-cell carcinoma and malignant melanoma only.

One case typifies this group.

A young woman did not bother about the lump in her breast until it began to "fester." Her husband agreed that they were not people to go to the doctor unless they had to. She complained of trouble with her eyes, he said, but she had not had new glasses for 20 years—she did not bother. She suffered from bad headaches, her husband suffered from stomach ulcers, and their little girl was delicate, with asthma and "nerves." Having been treated, this patient characteristically failed to respond to follow-up appointments.

Altogether one-quarter of the women with breast cancer did not realize the possible significance of their symptoms.

Almost two-thirds of the women with symptoms of cancer of the cervix were similarly ignorant. Naturally enough, younger women predominated in this group. Nineteen out of 20 pre-menopausal patients did not suspect cancer. Women of all ages from 35 to 65 attributed their symptoms to "the change," other reasons given being emotional upsets, strains, after-effects of confinement, and recurrence of previous gynaecological complaints.

Well over three-quarters of patients with skin and mouth cancer were ignorant of the nature of their symptoms. The patient with these symptoms had usually gone to his doctor (or dentist) before anxiety was aroused about the condition. Delay in these patients reflected their attitude to "doctoring," there being a general reluctance to seek advice for what seemed an exceptionally trivial matter.

Not all the 169 patients who were ignorant delayed—in fact, 46 had consulted their doctor within a month of the onset of symptoms. Further analysis showed that in over half these cases the reason for this prompt action was that the symptoms were too troublesome to neglect (flooding, painful mouth, etc.), relatives had insisted, the patient was under the doctor already or had gone about something else. Only 19 had gone within a month on their own initiative about symptoms which were not yet severe, and which they did not suspect to be cancer.

Action Determined by Fear

In essence the breast story exemplifies the fact that women do know as a matter of public knowledge that a lump in the breast is dangerous. Why the minority with cancer of the cervix, skin, and mouth suspected cancer while the great majority were ignorant can be broadly classified (Table II).

TABLE II

A disposition to worry about cancer, through having relatives or friends with the disease in same or other sites	10
Symptoms discussed with friends (in 3 cases a trained nurse) who suggested frankly the possibility of cancer	8
Mill-workers aware of danger of spinners' cancer ..	2
Patient a trained nurse	1
Read about cancer in paper	1
Other	12
	34

The reaction of seeking immediate advice appears to be related to age rather than to "knowing" or "not knowing," or to intelligence. Younger people predominated in this group. Of all those who acted immediately, 18 were psychologically tested, and in this group are to be found the highest and lowest scores obtained in the test. About the same proportion of patients who suspected cancer as of those who were ignorant sought advice immediately, or within one month of noticing symptoms—32 out of 126. These were mostly patients who had found a lump in the breast, and all but three went on their own initiative about symptoms which were not yet severe. Although these 32 had admitted to themselves the possibility of cancer it must be noted that not all sought advice with any sense of urgency. Two comments were: "It did occur to me afterwards that I wished I'd put it off a bit longer." "I thought people with cancer were wasted and ill. I wasn't ill and I wouldn't have bothered, but my daughter said if anything happens to you everything is going to come on me, so I went."

Only 15 more patients acted before the end of the third month.

The group which constitutes the main challenge to any public education project are the 79 who, though suspecting cancer, incurred substantial delay before seeking advice (three months and over). Four types of psychological reaction can be clearly seen in 68 of these patients (in 11 instances the data are inadequate). Almost half (36) had adjusted themselves psychologically in various ways to the threat of cancer. Thirty-two others delayed through a fear which inhibited action, and were in a state of conflict and anxiety. Usually some circumstance outside their own control had finally got them under medical care.

One patient in this later group, aged 59, delayed for a year after finding a lump in her breast. She "didn't tell a soul," for she knew her husband would insist on fetching the doctor. She fomented the discharging lesion and dressed it without looking at it—"I was terrified of it being something serious." Her husband, eventually noticing what was going on, fetched the doctor in spite of her insistence that the condition was improving. This patient had been an elder daughter and had nursed an ailing mother for 30 years. This experience of invalidism which had shadowed her life, and uncomprehending fear of the concept of cancer, were factors influencing her initial delay. Having delayed, feelings of guilt at "deceiving her husband" and wilfully neglecting herself made it increasingly difficult, as time passed, for her to take action.

Another patient, aged 40, found a lump in her breast and "didn't know what to do." She was "worried sick" and she readily admitted: "I concealed it from everyone." Faced with this calamity, for she never doubted it was cancer, she reacted on an emotional level and with no intellectual insight and therefore with no ability to work out the problem realistically. The emotional shock was too great and her personality a little too vague and ineffectual to integrate this new factor, and she was quite literally "ill with the worry of it." She was admitted to hospital for treatment for her stomach ulcer, and the breast condition was discovered then.

The following three common defensive reactions were noted.

Denial.—Seven patients denied to the interviewer and apparently to themselves that the condition could be serious, and they denied the implications of the disease, which were that it would not get better by itself, and that if left untreated it would kill them. They had ignored advice to see a doctor; their minds were already made up. Yet the very emphasis of their denial and the advanced stage of their disease belied their statements.

A single woman aged 43, pleasant and reserved, gave an impression of speaking with sincerity. She appeared to be on good

terms with the relatives with whom she lived. After being very fit for 12 years she developed a lump "like an abscess" in her breast. "I never thought it was anything I could not cure myself with lint and ointment, and I honestly never dreamed of worrying about it." The medical history described a huge, fixed cancer with wide skin involvement and ulceration. The smell from this lesion had become so noticeable that her relatives, to whom she had said nothing, insisted on fetching the doctor. Now here, she asked no questions, she was feeling better, and she presented an equable and completely blank front against any disturbing implications.

Suppression.—Eighteen patients did not deny that the condition was serious, but they rationalized it and did nothing. Two expressed this mechanism forthrightly. "I did think it might be cancer, but I shook it off." "I just put it right out of my mind. I didn't think of it and I didn't intend to until it hurt."

A retired ladies' companion delayed a year, when, instead of returning to her doctor as instructed, she delayed a further two years. She had always tended to put anything unpleasant away from her, she said. She felt that "cancer was a disease that people got who were dirty or who had done something wrong." The whole subject was distasteful to her and she did not wish to think of it. She had dismissed it from her mind while the lump in the breast caused no trouble, and she had two good reasons for doing so. First, she could not afford private care, and "objected to being put on show"; then, "and I don't tell this to everyone, there was no one but myself to look after my little dog."

Acceptance.—These 11 patients were mostly elderly. The severity of their symptoms alone finally induced them to seek advice. They were not looking for cures.

A patient aged 78 said: "I didn't want to be upset about it. I'm not expecting to be cured, you know."

Another old lady, living alone, said: "At my age, what was the use of bothering?" She felt that to give in to illness meant dependence on others, and she said with great feeling: "I couldn't have people coming in and running about for me."

A patient aged 76, with five years' delay, summed up the views of this group: "It didn't hurt and I'd turned 70 and had my span of life."

Some had a hard attitude to illness, regarding it as a weakness and making a virtue of "not giving in." It was something to put up with and not to complain about. In most of the stories of these older patients, however, was anxiety about dependency, about "being sent away" and losing their rooms or houses. So much depended on their keeping going, and they saw no hopeful outcome if they let themselves get into the hands of the hospitals.

Whatever the defensive reaction, fear is probably at the bottom of all delay that is not due to genuine ignorance. It sometimes derives from something concrete, childhood experiences, cancer in relatives, etc., but more often it is the reflection of a kind of cultural fear—a herd instinct rooted in prejudice and ignorance. Patients naturally have not thought it out in terms of "fear of what?" The fear of cancer is vague and is therefore usually expressed in some more concrete, secondary (or rationalized) basis. "Reasons" for delay include fear of "doctoring" and hospitals, operations, dependency, leaving home, "being sent away," losing a job, leaving a young family or a sick husband. These are more immediate and tangible and more easily expressed. They are an important part of the total situation, but it is difficult to know, had there not been fear of cancer in the background, if the patient who "knew" would have delayed for these "reasons." They are mentioned briefly in the section that follows.

Other Factors Influencing Action

Fear of Doctors and Hospitals.—Practically all the patients spoke appreciatively of their general practitioner. Yet this did not prevent expression of strong prejudices against "doctoring" in general; this attitude, and a "dread" or "horror" of hospitals, played a considerable part in delay, especially among older patients. Sometimes this feeling derived from childhood or adult experiences, and the reasoning was simple: they were hurt or frightened in hospital and they would not go again. Those who were most afraid were often those who had never been in hospital but were full of alarming hearsay. Sometimes a patient's fears were not so much of going into hospital as of leaving home. Some housewives had become homebound, seldom going out on their own. They may have feared that their condition was cancer, but if it did not trouble them a much greater fear was of "being sent away." Another aspect of the dislike of "doctoring" was the patient's feeling that she would be found to be making a fuss about nothing. "They think you're mithering if you keep going," expressed a common attitude.

Fear of Operation and Treatment.—Mixed up with fear of hospitals was the fear of operations and treatment, allied with doubt about the value of such procedures. Patients would say that they knew that cancer is sometimes cured, but this theoretical knowledge did not affect their tendency to delay. Over a quarter of all the patients spoke of fear of operations in connexion with their delay. Most were speaking of operations in general; others were referring specifically to radical mastectomy. Some said this was no worse than any other operation, but to some the mutilation aspect was deeply disturbing. Age was not always a factor in this. Fear of operation "because it makes it spread" was frequently met with.

A patient aged 72 said: "I don't believe in cutting, and I was expecting this if I went to the doctor." She had had a slow-growing lump in the breast for six years, and thought it would not be much bigger by the time she was 80.

Another patient said: "I always feel that if you're cut there it just goes on and you have to have more done—the beginning of a long process leading to the end." She had known two women who had died following radical mastectomy. "People seem to think it best to leave anything that doesn't hurt, and not stir it up," said another. "People believe that even if they have this operation it is just the beginning of a lot of trouble."

Friends and Relatives with Cancer.—It is difficult to say what influence looking after or having relatives with cancer will have on the patient's own subsequent behaviour when symptoms occur. Most of the relatives and friends mentioned had died, but even when some had done well this fact does not seem to have helped. The fear of cancer is such that while a bad outcome may have an adverse effect a good outcome seems to give little encouragement.

A patient had accompanied to hospital a friend who had found a lump in her breast. She had thought at the time how sensible her friend was to see to it at once. The lump was removed and the friend had no further trouble. A few years later our patient found a lump in her own breast, which she concealed from everyone until it ulcerated.

Another patient, whose mother and sister had both died of cancer of the breast, claimed complete ignorance of the significance of a lump she had found in her breast. Later, she gave away unintentionally the fact that she had known. Her sister had lived for ten years after treatment, but our patient considered it a failure. She was not prepared "to go through such painful treatment for nothing."

Domestic Difficulties.—In many cases where the reason for delay was said to have been domestic difficulties other factors were clearly involved, but in some this did appear to be an overriding consideration. Apart from domestic crises causing delay there were the housewives who had never before left their families. They felt that the accustomed pattern of life could not be upset.

"It is easy to tell other people, but it's so difficult when it comes to yourself. If it had just been myself to think of, or if it had been painful, I'd have seen to it sooner, because I did know it was dangerous to leave lumps. But I've been thinking too much of the family. I just couldn't go off and leave them to manage on their own."

Not Realizing the Need for Early Treatment.—Many patients knew in theory that they should not delay with a "lump," but there was much ignorance about whether it

was safe to delay so long as it did not hurt. Other patients, thinking the condition ultimately incurable, saw no reason to hurry.

A brisk, talkative patient of 40 had heard cancer education talks, which she thought most useful. Her father had been successfully treated for cancer of the mouth, and was now "wonderful." This patient developed a lump in her breast. "Of course, naturally your thoughts fly right away to cancer, don't they?" She delayed nine months. "I kept it to myself because I didn't want to worry my mother. I've had to tell her now, of course, but I was attending classes and I'm an active club worker—you know how you keep putting off. I definitely knew I mustn't leave it too long, for then perhaps nothing could be done. I just became conscious of the lump and made up my mind one night that it was time to see the doctor."

"I believe something can be done if things are taken in time" (delay of three months). "I knew I must get it seen to, as otherwise it might spread" (delay of one year).

Ending of Delay

Delay here is arbitrarily defined as three months or more, and this analysis concerns the 79 delayers who suspected cancer and the 72 who did not. One point stands out. Patients who "knew" tended to seek advice only when forced to do so by the severity of their symptoms. Most of those who did not know had sought advice before that stage was reached. Nevertheless, a quarter of the latter came under medical care only when their symptoms were severe. It was not, therefore, through fear of cancer that they delayed. Other factors were present—fear of "doctoring" and hospitals, waiting to see, shyness, "elderly neglect," etc., which contribute to delay whatever the disease. In a considerable number of cases the action of others ended the delay, the patient being unwilling to seek advice. The main circumstances in which delay was ended are given in Table III.

TABLE III

	Knew	Did Not Know
Patient's initiative, symptoms too painful or troublesome to ignore longer ..	39	18
Patient's initiative, symptoms not severe ..	11	21
Action of relatives or friends	19	18
Condition found by doctor, patient intending to conceal it or not bothering ..	6	5
Other	4	10
	79	72

Shands *et al.* (1951) mention the element of chance in the circumstances which finally decide the patient to seek advice—the "magic" intervention for which he waits. This is a very real thing. A number of patients in this series mentioned such chance happenings. From the point of view of cancer education it is an important aspect of the delay problem, for it would appear that a patient may have heard talks about the danger of "lumps" and do nothing about her own, yet months later she may go to her doctor suddenly because of a chance remark by a stranger in a queue, or because "I happened to be passing a gate with a doctor's name on it, and I just thought I would go in and ask him if he would tell me what it was." Chance stimuli are effective when the patient is already predisposed to act but is procrastinating. Education may help in the process of predisposing without necessarily providing the stimulus—this may come on a more personal level.

Relation Between Delay and Intelligence

To see if there was any relationship between delay and intelligence as measured by an accepted test an additional investigation was carried out among 63 women with breast and cervix cancer, aged under 60, who were up and about. Out of 68 asked there were five refusals (Table IV).

The Wechsler–Bellevue intelligence scale has been very much used in England for testing adults and has been standardized separately for people of different ages. This means that a 50-year-old patient is being compared with a wide variety of other people of 50, and not directly with younger or older people. The construction of the test does not draw too heavily on educational achievement or the ability to use words.

TABLE IV

	Group Tested	Total Group Under 60
No delay or under 1 month	23	44
Some delay, 1-3 months	15	26
Delay of 3 months or more	25	59

There is no evidence that the patients with the highest scores did not delay while those with the lowest scores delayed the longest. Scores obtained by patients who had delayed a year or more are spread over the middle of the range, with perhaps a slight tendency to have higher than average scores. Results expressed in terms of the product-moment coefficient by Pearson's method give a figure of 0.18, which is not significant. It is concluded, therefore, that there is probably no significant relationship between delay and intellectual level as measured by this test.

Discussion

It has been shown that over half the patients with cancer of the breast, cervix uteri, skin, and mouth did not suspect cancer when they first sought advice. Some of these sought advice only when the symptoms were severe or troublesome. Action, therefore, depended on individual standards of fitness and the level of ill-health they were prepared to put up with. They delayed through ignorance, and we do not know what they would have done had they suspected cancer.

We do know, however, what a group of patients who suspected cancer from the beginning actually did. Nearly two-thirds delayed three months or more, while one-third delayed a year or more. This delay is greater than that found among those who did not suspect cancer. More patients who suspected cancer sought advice only when the symptoms were severe.

Prima facie, it might be argued from this that people are better left in ignorance. This might be so if they were in the habit of going to their doctor promptly with symptoms which are not troublesome and which they do not take seriously. However, it has been shown that this is not a sufficient stimulus in a large enough number of cases.

Harms *et al.* (1943), discussing causes for delay of cancer patients attending an American hospital, say that it is noteworthy that fear of cancer played a minor part. "The major cause for the patient delay is primarily lack of proper information on the cancer problem. . . . Thus the failure of the educational programme to furnish the patient with sufficient information may be held responsible for delay in at least 85% of the cases." Earlier they say: "The median delay for patients who thought they had breast cancer was 3.25 months, while the median delay for all breast cancer was 6.5 months. This suggests that the delay could be halved if all patients were aware of the significance of their symptoms." If this is so education in America has succeeded in reducing the fear of cancer which is so largely responsible for the delay of patients who "knew" in the present series. Our study has shown no ground for assuming that, given adequate information on the significance of symptoms, people in this area—particularly women with cancer of the breast—would as yet react "rationally." Cancer education here, in addition to its purely informative role concerning significant symptoms, still has the more fundamental task of convincing those who suspect cancer that ultimately they will be better off if they seek treatment soon. It has also to influence the deeper and more primitive level of thinking, with its "magical," moral, and retributive elements.

Lack of confidence in what can now be done for them is clearly an important factor in the delay of patients who suspect cancer. Two things which appear to contribute to this lack of confidence are the fate of the advanced patient and the policy of medical silence about cancer.

From the point of view of influencing people to come earlier for treatment the fate of the advanced patient has an adverse effect. As Donaldson (1952) points out, an enormous number of people are brought into direct contact with cancer every year through nursing relatives dying at home. Their attitude and that of the group around them are influenced by these experiences. At the time of increasing anxiety when the patient begins to go downhill the hospital may give him a longer appointment, and his own doctor, it is sometimes alleged, "doesn't seem to take the same interest now." Perhaps he cannot get a bed in hospital, and living conditions may be unsuitable or squalid. He may be inadequately sedated. Worst of all is the feeling that nothing is now being done for him. This is cancer as the general population knows it—unpleasant, incurable, and rejected. These are not entirely welfare considerations; they have a direct bearing on the public's lack of confidence in what can be done for the cancer patient.

A policy of silence regarding a diagnosis of cancer is maintained in general in this country in the supposed interests of the patient. Is this done at the cost of diminishing public confidence in the value of treatment? The fact of palliative treatment is not understood, and hospitals appear to be trying to cure all their patients and failing in a high proportion of cases. If the patient does well the condition "cannot have been cancer." The known cured cancer case is a rarity. This is not the place to discuss what should be done about it, but the fact is entirely relevant to the findings of this study. It is clear that one of the causes of delay is lack of confidence in the efficacy of any treatment. In some way or other it must be brought home to people that some types of cancer are not only curable but are being cured in early cases.

Summary

A study, based on detailed interviewing of 314 patients with cancer of the breast, cervix uteri, skin, or mouth showed that approximately one-half delayed seeking advice for three months or more, and a quarter for a year or more, after first noticing symptoms. Most of the patients with breast cancer suspected they had cancer; patients with the other three types of cancer were, in the main, ignorant of the significance of their symptoms. There was greater delay among those who suspected cancer than among those who did not. Two quite distinct processes operate to cause delay.

1. *Ignorance*.—Here, delay in seeking advice clearly reflects the patient's general attitude towards "doctoring" and has no special relationship to cancer as such.

2. *Fear* (of cancer).—This is clearly indicative that, in some degree at least, the patient really "knows" the probable nature of the disease. Such fear may trigger a reasonable response and make for "immediate" action. Much more often, in the group analysed, it inhibited rational action and was the underlying factor causing delay, although this was camouflaged behind a variety of more superficial ostensible reasons. Testing by the Wechsler–Bellevue intelligence scale indicated that there was no significant relationship between delay and intellectual level as measured by this test.

These distinct and mutually exclusive attitudes to the different diseases must be recognized in any schemes for public education in this field.

We are indebted to Mr. J. C. Kenna, lecturer in clinical psychology, University of Manchester, for advice on psychological testing, and to Miss E. F. May and Mrs. P. F. R. Venables for carrying it out.

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EARLY CANCER DETECTION AND EDUCATION: A PILOT TRIAL

BY

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Every clinician in the field of cancer finds that a large proportion of patients coming for treatment at present must be classed as "late" cases, in which radical cure cannot be expected. Our thesis is that many of these cases could and should have been diagnosed and treated at a much earlier stage. Efforts to reduce the delay have been on two main lines: (1) education of the public by suitable propaganda, and (2) medical examination.

Present Investigation

The Ministry of Health, in a recent circular, considers public propaganda inadvisable at present but favours local exploratory schemes to enlarge our knowledge of the possibilities.

We have sought to combine some of the advantages of both the above methods—education and examination. We feel that cancer education is desirable, but should be conducted as personally as possible between physician and patient. Education and medical examination can and should be carried out together.

It was decided to offer all the patients between the ages of 40 and 70 on the National Health Service list of one of us a brief examination conducted specifically to detect early accessible cancer and to combine this with an effort at education in the cardinal symptoms of malignant disease. The women were invited first.

Circular letters were sent out in batches, offering free medical examination; stamped envelopes and reply forms were enclosed. The word "cancer" was avoided at all times, if possible, as being in itself a potent agent of distress.

Female Patients

Invitations were sent to 766, and 422 (55%) accepted. This, we felt, was a very satisfactory response. The examinations were carried out in batches of about 20 at one session a week, lasting about 2½ hours. The patients' National Health Service cards were available to assist rapid visualization of their histories.

After taking a careful menstrual history, with special reference to heavy or irregular bleeding and discharge, leading questions were asked concerning the following: regularity of bowels, unusual constipation or diarrhoea, blood in motions, piles, abdominal pain, sore places in mouth or throat, dysphagia, dysuria, haematuria, cough, hoarseness, moles or warts, lumps or swellings, usual weight, smoking habits.

If the answers appeared unsatisfactory, further inquiry was made and all the facts were noted. The mouth, tongue, pharynx, and larynx were then examined, including indirect laryngoscopy, and the neck was inspected and palpated. The patient then passed into the undressing-room, where she was instructed to take off *all* her clothes and to put on a dressing-gown provided. She then passed on into the examination room, where the body was inspected, the

breasts were examined, the abdomen was palpated, and a manual and speculum vaginal examination and a digital rectal examination were made. While the doctor conducted the breast, etc., examination he took the opportunity of telling each patient that she should feel the breasts every month and at once report any swelling, and that she should always report any irregular bleeding or discharge, etc.

No attempt was made to examine the heart, lungs, or central nervous system. If any feature of the history brought out the need for such an examination it was arranged for at another time in the ordinary consulting hours. No pathological investigations were undertaken; it was considered that if any indication for special examination was present the patient should be referred to an appropriate consultant in the same way as if she had attended as an ordinary surgery patient. All examinations were purposely confined to the scope of ordinary general practice, and no attempt was made to set up a hospital-type diagnostic centre. At the conclusion of the examination each patient was given a pamphlet, listing the chief warning signs (lumps, bleeding, hoarseness, dysphagia, etc.) to be reported without delay, and emphasizing the importance of *not waiting till pain was felt.*

Recall Examinations.—Inevitably, a number of conditions were met which, while being obviously abnormal, were insufficiently well defined to merit any immediate action. These were cases for recall in three to six months—for example, some erosions, vague swellings in the pouch of Douglas, and unsatisfactory menstrual histories. The actual process of recall set a major problem, how to proceed without causing alarm and anxiety. At first, patients were told quite briefly that they would be sent for again in three months for re-examination. But experience quickly showed that they worried in the meantime and thought all sorts of things had been discovered. After trying various alternatives, we eventually decided to send each a personal note near the time of recall, offering another appointment in view of the previous findings; this had the desired effect. The recall problem is certainly one of the major difficulties of a scheme such as ours.

Results.—The principal findings are listed in Table I. Only one new major cancer was discovered (of breast). Eight patients were referred to gynaecologists for opinion

TABLE I.—*Principal Results of Survey in Females*

Invitations issued	766	
Acceptances	422	(55%)
New cancer discovered	1	Breast (radical mastectomy performed; histologically confined to breast, no axillary secondaries)
Referred to hospital, excised, and proved benign	8	1 Recurrent lipoma of arm 3 Uterine fibroids 1 Ovarian cyst 1 Cervix papilloma 1 Palate ,, 1 Thyroid adenoma
Follow-up examination for doubtful findings	32	21 Pelvis (uterus, ovary) 5 Breast (including 1 case of bleeding nipple, under regular observation) 4 Rectum (polypi) 2 Larynx (papilloma)
Miscellaneous	3	1 Dyspareunia—operation performed 1 Procidentia— ,, ,, 1 Larynx chondroma (asymptomatic)

on masses in the pouch of Douglas. Three have had hysterectomies for fibroids, one was discovered at laparotomy to have secondaries from a previous carcinoma of the colon, two proved to have benign ovarian cysts, and the other two refused operation. Abnormal pelvic tumours are not rare, and must always arouse suspicion. Ovarian cysts, benign or malignant, are usually symptomless for a long time, but can be felt on pelvic examination at an early stage. They represent a fertile field for prophylaxis, for benign cysts can probably become malignant, and the present-day poor results in ovarian carcinoma cannot be improved without early removal of enlarging pelvic tumours. *This can be achieved, not by education of the patient in early symptoms, but only by periodic pelvic examination.*

Male Patients

Invitations were sent to 716 patients, and 415 (58%) accepted. The same type of history was taken and the same leading questions (where appropriate) were put. A similar examination was conducted, including mouth, pharynx, larynx, abdomen, genitalia, and rectum.

As a concession to an almost universal anxiety among men of this age group it was decided to take the blood pressure in every case. In only one instance was it found necessary to refer a young hypertensive to a physician. Practically the entire remainder were told that the reading was satisfactory and the expressions of relief and appreciation were constant.

Results.—These are summarized in Table II. No new major cancer was discovered primarily, but the pre-malignant and potentially malignant lesions discovered and

TABLE II.—*Principal Results of Survey in Males*

Invitations issued	716	
Acceptances	415	(58%)
Minor new cancer discovered	1	Rodent ulcer of face (treated by x-rays, healed)
Pre-malignant or doubtful lesions, under observation	9	1 Larynx—chronic hypertrophic laryngitis. Biopsy taken, showed suspicious areas without definite invasion 3 Larynx—papillomata 1 Penis—erythroplasia 2 ? Early rodent ulcers of face 1 Testis—nodule 1 Enlarged bilateral axillary lymph nodes
Benign lesions referred to hospital	4	1 Cyst of hand 1 Advanced osteoarthritis of hip (on waiting-list for arthroplasty) 1 Dyspnoea (fully investigated—final diagnosis of "chronic bronchitis") 1 Molluscum sebaceum of nose (treated by curettage, healed)

kept under observation are noteworthy. Slow-growing tumours such as these carry generally a good prognosis with early removal when appearances justify active treatment.

Benign Lesions Discovered

In any series of medical examinations, however superficial, a number of benign lesions, inflammatory, neoplastic, degenerative, etc., will inevitably be discovered. Although it was not our intention to search for such common things, note was made of the obvious benign lesions as they appeared in the systems examined. Vaginal examination, for example, revealed 43 cases of cervical erosion and 10 cases of urethral caruncle. In none of these was treatment thought to be indicated. Other benign lesions found included cervical polyp, uterine fibroid, Bartholin cyst, "chronic mastitis," goitre (common in this region, on the edge of Derbyshire), and laryngeal chondroma.

An enlarging thyroid adenoma (a potentially malignant lesion) was treated by excision. One case of dyspareunia and one of procidentia were also sent to hospital and treated surgically.

Repeat Survey of Female Patients

Following the initial survey of both sexes, it seemed desirable to attempt to repeat the examination, at least in the women. Of the 422 initially examined, second acceptances were obtained in 170 (or 40%). Some drop, of course, was inevitable, and a similar experience was found by Siddall (1952).

This time we were able (by the kind help of Dr. G. R. Osborn, of the Derby Royal Infirmary) to extend the investigation by including a routine vaginal smear, by the method of Papanicolaou (Papanicolaou and Traut, 1943; Osborn, 1953).

The chief results are summarized in Table III.

TABLE III.—*Principal Results in Second Female Survey*

Invitations issued ..	422 That is, the "acceptances" of Table I
Acceptances	170 (40%)
Vaginal smear examinations	170 { 2 showed trichomonas infection 1 showed doubtful neoplastic cells
Minor operations ..	2 { Enlarging pigmented papilloma on abdomen; excision—histologically benign Cervical polyp removed—histologically benign
Miscellaneous ..	6 Referred to hospital for benign conditions (cervicitis, etc.)

Undetected Cancers

It is clearly of major importance to determine the number of cancers "missed" by our survey, as shown by the subsequent history of the patients. To this end Table IV has been compiled, with details of all the cancer cases that have been diagnosed in patients examined, beginning from the date of the first examination (July, 1951) to the present—

TABLE IV.—*Malignant Cases Appearing Subsequent to Examination*

No.	Site of Cancer	Sex and Age	Alive or Dead	Length of History of Symptoms	Interval from Examination to Diagnosis	? Cancer Present at Time of Examination	Value of Examination or Education
1	Colon	M 54	Alive	2 weeks	3 weeks	Yes	Prompt attendance definitely due to pamphlet
2	Bladder	M 50	,,	"Cystitis" 3 months; haematuria 2 days	1½ years	No	No definite effect
3	Stomach	M 64	Dead	1 month	1½ ,,	,,	No effect. (Old gastric history. Neurotic subject)
4	Colon	M 52	Alive	2 weeks	1 year	,,	No definite effect. (Early attendance because of primary symptom of pain)
5	Stomach	F 44	Dead	Indefinite	1 ,,	,,	No value. (Symptoms from secondaries only)
6	Brain	F 42	,,	1 week	2 months	Yes	No value
7	Breast	F 47	Alive	1 day	1 year	No	Early self-detection through pamphlet
8	Bladder	F 57	Dead	1 week	6 months	Yes	No definite value

a period of 2 years 9 months. Column 6 gives the time interval from our examination up to the appearance of symptoms relative to the cancer, and the next column attempts to estimate whether the growth was present at the time of our examination. This estimate is necessarily personal and subjective, and apt to be very wide of the mark; it is well known that microscopically recognizable cancer can be present many years before giving signs; our "Yes" or "No" is often rather an answer to the question, Could the cancer probably have been detected by more detailed and thorough investigation at the time?—and even the answer to this more limited question is subject to a very considerable margin of error. The last column attempts to assess the actual value of the examination or propaganda as judged by the patient's subsequent history; here again considerable uncertainty enters, but we felt it important to make some attempt of the kind, if only as a basis for argument.

From column 7 it will be seen that we consider cancer to have been present but undetected by us at the time of our examination in three cases (Nos. 1, 6, and 8). In Case 6, of cerebral glioma, although symptoms of "rheumatism" appeared only two months after our examination, it is highly improbable that more thorough clinical examination by ourselves at the time would have detected anything abnormal or altered the prognosis. Case 8 was examined in January, 1952, and at the time was on the waiting-list at hospital for treatment of urethral caruncle; in March dysuria and frequency set in, and she was sent to hospital again, but the symptoms were attributed to the caruncle and she had to wait till June before being admitted as an emergency with acute retention; cancer was quite unsuspected, being discovered only on cystoscopy; it is difficult to blame anyone for this sequence of events, and nothing short of routine cystoscopy—clearly quite impracticable—could have revealed the growth sooner.

Case 2 was examined in June, 1952, and there was then some history of mild dysuria: no physical signs were found, but a note was made on the patient's card advising reference to a urologist if symptoms persisted. His next attendance was in December, 1953, with symptoms of cystitis for the past three months; treatment for cystitis was begun, but he did not reappear till February, 1954, with two days' haematuria; cystoscopy showed multiple papillomata, one of them infiltrating and malignant. With retrospective wisdom, we might blame ourselves for not following up his original dysuria in June, 1952; the symptoms apparently improved spontaneously and an ordinary bout of cystitis gives the same clinical picture. It he had been examined cystoscopically, papillomata would presumably have been discovered, and active treatment of these might possibly have prevented the later malignant degeneration. This case, as well as No. 8 above described, underlines the value of early cystoscopy; clearly, it is an impracticable counsel of perfection to submit all cases of cystitis to this inconvenience, and a line must be drawn somewhere—just where, is the problem before us.

Cases 1 and 7 represent undoubted triumphs for the educational campaign. In Case 1 the patient stated that it was certainly the pamphlet that was responsible for his reporting so soon; since his symptoms began only one week after his examination, the warnings would be fresh in his memory. In Case 7 the nodule in the breast was reported at once—it was less than 1 cm. in size, one of the smallest we have ever seen. Radical mastectomy was carried out, but microscopically invasion of lymphatics was evident, with secondaries in axillary nodes. In spite of post-operative radiotherapy, recurrence on the chest wall followed and the prognosis is virtually hopeless. This is an example of the biologically virulent type of growth which metastasizes from the start.

Additional evidence of the potential value of education comes from the fact that some half-dozen patients have reported since the start of the examinations, for rectal bleeding—all of them mentioning the pamphlet with its warning. All of these cases proved to be due to haemorrhoids.

Financial Cost

The chief items of expenditure were for the services of the secretary-chaperon, duplication of circulars, envelopes, and postages (including stamp enclosed for reply).

Fifty-five sessions were held and about 1,000 examinations carried out. The total cost was approximately £150.

The medical man-hours totalled about 140, but in this experimental survey the question of payment for medical services did not arise.

Discussion

Detectable Cancers

With the type of examinations we have used, "detectable" will necessarily approximate to "accessible." What proportion of total cancer will this include? Using the figures of Tod (1949) for estimated incidence in different organs for England and Wales, we may attempt an answer as follows: Out of a total incidence of 2,112 cases per million of population we may place in the "accessible" group the sites listed in Table V, giving 977—that is,

TABLE V.—*List of "Accessible" Cancers, and Incidence (Abstracted from Tod, 1949)*

Site	Incidence per Million
Skin	200
Lip	16
Tongue	27
Mouth	10
Jaw (including antrum)	12
Palate	4
Pharynx (including tonsil)	18
Larynx	29
Breast	225
Parotid	5
Thyroid	8
Rectum and anus	156
Male genitals	10
Prostate	56
Uterus	132
Ovary	56
Vulva and vagina	13
	977

approaching one-half. The largest groups among the "inaccessible" types are: lung and mediastinum (171), oesophagus (54), stomach (322), other intestine (including liver and pancreas) (389), bladder (48), Hodgkin's disease and leukaemia (51)—all these together total 1,035.

From Table V it is clear that the cancers most likely to be "picked up" are: skin, breast, rectum, and uterus. Of these, the skin is the least important from the present standpoint, as the mortality is relatively low. The most dangerous of skin cancers is the malignant melanoma; there is a useful field for prophylaxis here in the removal of doubtful moles and pigmented patches, especially from sites exposed to friction and trauma.

The factor of expense has ruled out even the simpler supplementary tests such as urine analysis, Wassermann reaction, and blood counts. Since we had no intention of providing a general medical examination, we felt no compunctions about omitting these tests, as their contribution to cancer detection could not be considerable. Blood counts might have picked out, for example, a case of leukaemia, especially of the chronic lymphatic type in the elderly, where it may be almost symptomless. But leukaemias, like the reticuloses generally, are not such urgent candidates for early detection as the common carcinomas, as their ultimate prognosis is scarcely influenced by earliness or lateness of detection.

There are at least two ancillary investigations, however, that are reasonably practical politics and of real value in "large-scale" cancer detection—the chest *x*-ray film and the vaginal smear.

Chest X-ray Film.—Some recent results of the largest mass chest *x*-ray survey so far made are given by Guiss (1952); in 1,867,201 people, 3,500 "suspects" were found, and after investigation 144 carcinomas were confirmed; the operability rate (57%) and resection rate (47%) were relatively very high. Boucot and Sokoloff (1954), however, are much less optimistic about its possibilities. To be of real value the surveys would need to be repeated at intervals of, at most, six months.

Vaginal Smears.—The experienced pathologist can pick out cancer cells, even in isolation, that have been exfoliated from a malignant growth. The method has been used extensively in the U.S.A., especially as a screening test for large groups, and there is no question about its ability to pick out cancers, both of the cervix and of the body of the uterus, at a stage long before they are clinically apparent. The method has, in fact, led to increasing interest in, and detection of, the "carcinoma *in situ*"—that is, in the pre-invasive stage, when malignant changes are still confined to the epithelium. A recent example of its value is given by Erickson (1953): in 20,000 women of the general population screened there were 1.8% of "positive and suspicious" findings; subsequent biopsies showed about half of them to have carcinoma of the cervix, intra-epithelial or invasive. Siddall (1952), in an investigation comparable with the present one, found three early cancers of the cervix by this method in 563 apparently well women. The drawback of the technique is the relatively great length of time required for examination of the smears, as well as the scarcity of experienced workers. This has so far confined its use in this country mainly to the gynaecological departments of a few large hospitals—that is, to patients with some complaint; here it has been found of undoubted value (Discussion, 1951).

Other Diagnostic Aids.—Investigations such as smears of gastric aspirations, routine sigmoidoscopy, etc., have been used in the U.S.A., but are practicable only in hospital, and can hardly be used on a large scale. Serological tests for cancer have also proved very disappointing so far.

Is Early Treatment Essential?

The orthodox assumption that early treatment, before spread takes places, should in general be curative has been under heavy recent criticism. On the basis of breast cancer statistics, McKinnon (1952a, 1952b) and Park and Lees (1951) conclude that the survival rate is not appreciably influenced by treatment; delay is therefore not of prime importance, and "curability" is explicable wholly by intrinsic variations in growth rate. Foulds (1951) emphasizes the complex characters of growths—rate of growth, invasiveness, aptitude for dissemination, etc., are not necessarily in step in a particular growth. Considerations of this nature help to explain the paradoxical findings that a short history of symptoms is not necessarily a good prognostic index and may even be the reverse (Walters, Gray, and Priestley, 1941; Harnett, 1953; Swynnerton and Truelove, 1952). *But this does not imply that there is no difference in survival rates of patients treated in the early or later stages of the disease* (Russ, 1953): all Stage 2, 3, and 4 cases will at one time have been Stage 1 cases, and if treated during Stage 1 would presumably give some at least of the superior results of Stage 1 cases.

The concept of an "early" case is clearly not as simple as was once thought, and clinical "early" cases may be pathologically late (compare Case 7 above). But, as pointed out by Kreyberg (1953) and Kreyberg and Christiansen (1953), who found that 50% of clinically very early breast cancers eventually succumbed to secondaries, early diagnosis and treatment are still of great importance, as we cannot know beforehand who will benefit. Even if the benefit is statistically modest, early treatment of the primary usually gives improved palliative effects, which are normally neglected in cancer statistics.

With the exception of the two extremes of biological virulence, earlier detection and treatment of the large intermediate group seem to hold out the best present-day hope of improvement.

Some Results in Cancer-Detection Work

The American Cancer Society (1949) quoted 0.8% cancers and 10% pre-cancerous lesions in a mixed group of 51,728 symptomatic and asymptomatic patients seen in detection centres throughout the country. Jones and Cameron (1950), from their data, estimate a potential case-finding rate of 1%. Cliffton and Rush (1951) report 1.2%, while 2.6% of known cancer subjects were found to have a second malignant tumour.

Siddall (1951, 1952) reports a survey in general practice, more nearly comparable to ours, confined to women. During eight years 1,131 patients were seen; 14 cancers were found in the asymptomatic group and 22 in those with symptoms.

Psychological Aspects

This side of the problem demands the most careful consideration. Indiscriminate publicity can do a great deal of harm. Cancerphobia is common, and medical examination and reassurance can do much to combat it. Its victims, however, may promptly transfer their anxiety to some other field—for example, cardiac. The problem is not that of cancerphobia specifically, but the vastly greater one of neurosis generally.

Our own experience parallels that of Siddall (1952), who found that his patients with cancerphobia could all be

considerably or completely relieved, and that the psychological benefits outweighed the disadvantages.

As an example of the confusion and ignorance in the public mind, as the basis of so much fear and worry, it is worth noting the results of a recent questionary to the general public reported by Raven (1953)—17% thought cancer was infectious, 27% that it was incurable, and 20% that it was of doubtful curability.

Other Aspects

In the U.S.A. the average cost per case of cancer discovered has been estimated at anything from 1,000 to 8,000 dollars—clearly prohibitive here. On this score alone, the general practitioner's consulting-room is preferable. Moreover, it is work of a type that enhances the scope of general practice (unlike so many proposals). Conclusions about the value of periodic examinations can be reached only on the basis of large-scale surveys, with adequate follow-up. A suitable agency would appear to be the health centre, of the type recently built, and the financial cost would be relatively low.

Summary

This paper describes a survey in a general practice, in which clinical medical examination was offered to patients between the ages of 40 and 70 combined with instructional propaganda in early cancer symptoms. Four hundred and twenty-two women and 415 men responded, making acceptance rates of 55% and 58%. A follow-up examination on the women was also carried out, including a vaginal cytological smear, bringing the total of examinations to about 1,000.

The findings are reported, with details of malignant and non-malignant lesions discovered.

Some of the arguments for and against such examinations and their possible value in cancer morbidity and mortality are discussed. The psychological and financial aspects are also touched on.

It is concluded that further experimental trials on similar lines would be justified, and are necessary before any appraisal of their long-term value can be made.

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RECENT DEVELOPMENTS IN THE MANAGEMENT OF BRAIN ABSCESS*

BY

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During the last ten years there have been considerable advances in the diagnosis and treatment of brain abscess. Of overriding importance has been the introduction of the antibiotics, but superior methods of location, and experience in the methods of treatment available, have all contributed to the improved results. Thus in the Department of Neurological Surgery, Oxford, the mortality has fallen steadily (Table I). The earlier series

TABLE I.—*Brain Abscess*, 1938–54

Years	No. of Cases	Deaths
1938–43 (before penicillin)	48	22 (46%)
1944–48	62	18 (29%)
1950–54	36	7 (19·4%)

have been described previously (Pennybacker, 1951), and in the present paper the results over the last four years (1950–4) are recorded. During this period there were 36 cases with 7 deaths, a mortality of 19.4%. Concerning these seven deaths it should be noted that three of the patients had been admitted at a late stage, when the abscess had already burst into the ventricle and ventriculitis was established, and one other patient had had multiple abscesses.

In trying to assess these results, the bare figures do not perhaps tell the whole story, since in later years there have been an increasing number of acute cases (including metastatic abscesses, particularly from the chest) reaching neurosurgical clinics for treatment, which may weight the results adversely. The modern trend is perhaps best reflected in the treatment of abscesses resulting from paranasal sinus and otogenic infection : of 20 consecutive patients with abscesses from these sources in the last four years, 19 recovered and 1 died. However, a brain abscess is still a serious matter, and in looking to the future one should not only be seeking for further improvement in diagnosis and treatment but be attempting to reduce the incidence of brain abscess by attention to the sources of infection and also criticizing the quality of the result obtained.

Sources and Prevention

There is a general impression that brain abscess is less common than used to be the case, and this may well be so. No dramatic change is yet shown, however, in the incidence from neurosurgical clinics, but this may be due to the fact that diagnosis is much better than formerly and more cases are now recognized and sent for treatment.

TABLE II.—*Source of Infection in* 36 *Cases*, 1950–4

	No. of Cases	Deaths
Frontal sinusitis	5	1
Mastoiditis { Temporal lobe	14	0
Mastoiditis { Cerebellum	1	0
Chest infections	4	2
Metastatic from other sources	4	2
Direct implantation (penetrating wounds, etc.)	4	2
Infection of face, scalp, and facial bones	4	0
	36	7

The sources of infection in this series are shown in Table II. The common cause of abscess is *paranasal sinus and ear infection*, and it would indeed be surprising if the better social conditions of recent years and the greater

*Read in the Section of Neurology at the Annual Meeting of the British Medical Association, Glasgow, 1954.

attention given to otitis media and the chronic running ear did not lower the incidence of brain abscess. Effective treatment of ear, nose, and throat infections is the most important preventive measure in this field.

Of the 36 cases, 4 resulted from *direct wounds* of the scalp or skull. The insistence on proper surgical management of all scalp lacerations and compound fractures has yielded rich dividends, and first-intention healing is now so much a routine that there is even a danger of underrating the relatively narrow margin of safety that exists. In a recent patient from Korea, for example, brain abscess followed a small compound depressed fracture of the skull in which definitive surgical treatment was delayed owing to the prior claims of associated severe limb injuries. It was the only case of brain abscess seen among these patients returning to Oxford.† Particular attention is also necessary for fractures of the skull which implicate the paranasal air sinuses and mastoid regions, since they carry an additional risk of intracranial infection (Lewin, 1954).

Before the days of penicillin, metastatic brain abscesses from *chest infection* such as bronchiectasis and empyema carried a mortality of wellnigh 100%. It is still the most lethal of all the abscesses, but many cases have now been carried through successfully, and indeed the stage has been reached where—for example, after treatment of a brain abscess secondary to bronchiectasis—removal of the affected lung may be undertaken to lessen the chance of a recurrent abscess. A recent series of successful cases so treated has been reported (Pennybacker and Sellors, 1948).

Brain abscess may complicate congenital heart disease even in the absence of bacterial endocarditis, owing to infected venous blood being recirculated through the systemic circulation without first passing through the lungs. Gates *et al.* (1947) have shown that about 5% of deaths from congenital anomalies of the heart and great vessels are due to this cause. In the cases recorded, the brain abscess has usually been solitary, so that with the recent developments in cardiac surgery the possibilities of treating the abscess and also the causal lesion are apparent. The risk of precipitating brain abscess by cardiac catheterization in the investigation of congenital anomalies has also been pointed out, and it has been suggested that penicillin and heparin should be given prophylactically.

All these factors, therefore, may combine to lower the incidence of brain abscess in the future. Indeed, in few other instances of serious complications in surgery are the opportunities for preventive measures higher than with brain abscess.

Early Diagnosis

The clinical picture of the early invasive stage of intracerebral infection with severe headache, vomiting, slowing pulse, and drowsiness passing on to coma is well known, and there is little difficulty in concluding in these circumstances that an intracranial complication has supervened. These gross symptoms and signs due to cerebral oedema and encephalitis still occur, but in many cases nowadays the early use of penicillin so controls this active and very dangerous invasive stage that the first signs of a brain abscess may be attended by only relatively mild changes in the patient's condition. Indeed, the risk is that a diagnosis of cerebral abscess may be excluded on the premise that the patient is not ill enough.

During a sinus or mastoid infection, the very fact that the patient is not as well as he ought to be should be enough to raise the suspicion of an intracranial complication, and this probability is increased if headache is present. It is at this stage that a careful neurological examination may yield unequivocal evidence. Obvious papilloedema, a hemiparesis, dysphasia, or frank ataxia may be present, but again in other patients such gross signs are absent. Frontal lobe abscesses, for example, may declare themselves by only a mild reflex change down one side of the body, or possibly a little facial weakness or an isolated fit, or nocturnal incontinence in a patient otherwise alert. In the temporal lobe, an abscess will very commonly produce a visual-field defect in the opposite upper homonymous field, which may be missed unless confrontation tests and careful perimetry are done as a routine; and if it is in the dominant hemisphere a dysphasia may be present, but may be mild and detected only if formal examination such as the meaning of objects, etc., is carried out. A cerebellar abscess usually gives rise to nystagmus. These relatively mild signs, when looked for, are present much more often than is thought to be the case.

Lumbar Puncture.—A lumbar puncture may be invaluable, since the fluid is rarely normal in the presence of an acute or subacute abscess. The protein content is usually raised to 100 mg. per 100 ml. or more (normal 40 mg.) and there is often an increase of white cells in the C.S.F. from 10 to 200 per c.mm. Nevertheless this test should be used with caution in the presence of marked papilloedema, a slow pulse, or rapidly increasing drowsiness, since there is a risk of tentorial impaction, and in these circumstances it is wise to have facilities for dealing with the abscess at hand.

Electroencephalography and angiography are two other ancillary methods of diagnosis that have been developed in recent years and are proving helpful in the more accurate location of an abscess.

Electroencephalography.—This test may help in locating an abscess and also in differential diagnosis from such conditions as thrombophlebitis. In addition, serial recordings during the management of an abscess may give a clue should a further abscess be developing elsewhere, particularly in cases of metastatic origin. The focal disturbance seen is that common to any rapidly expanding intracranial lesion, and consists essentially of a high-voltage delta activity in the vicinity of the lesion, together with a local phase reversal. Tutton and Whittaker (1953, personal communication) have commented favourably on the use of the E.E.G. in the management of brain abscess. It has the merit of being easy to perform and not disturbing to the patient.

Angiography.—Another recent development in the diagnosis of brain abscess has been the use of angiography. For supratentorial lesions, particularly of the frontal and temporal lobes, which are the common sites for abscess, it may be invaluable and will locate the lesion accurately without the considerable upset that may attend the use of ventriculography in such cases. It affords, of course, no evidence of the true nature of the lesion, and in abscess cases the appearance is one of vessel displacement by an avascular space-occupying lesion.

Ventriculography is still used for the diagnosis of the difficult deeply seated hemisphere and infratentorial abscess, but the tendency nowadays is to employ air studies less in the acute stage, although, as referred to below, to rely on them, if anything, more in the later stages as a test of cure.

Treatment

Now that the antibiotics, usually penicillin, do so much to control the invasive stage of encephalitis and cerebral oedema, it is possible to simplify the surgery of the acute abscess, and most surgeons are agreed to-day that the first treatment of choice, and one which is applicable to the majority of abscesses, is simple needle aspiration of the abscess through a suitably placed burr-hole, repeated as required, with local injection into the abscess cavity of the appropriate antibiotic—in most cases penicillin (Tutton, 1953). Taylor (1950) favours in addition the routine use of intraventricular penicillin during this stage, and makes the point that it lessens the risks of dissemination of the infection into the cerebrospinal fluid spaces of the brain around the abscess, one of the main complications in the management of brain abscess.

†The patients from Korea were admitted to the Military Hospital (Head Injuries), Wheatley, Oxon, and their management will be described elsewhere.

Part of the success of aspiration is due to the accurate location of the abscess, and the advantages of the recent developments already referred to are apparent. The operation is conducted through a clean incision, and we have long since abandoned attempts to drain an abscess along the entry track, as, for example, through a mastoid wound, which may lead to cerebral fungus. Similarly, open drainage is rarely effective after the first escape of pus, and the insertion of tubes and subsequent manipulations may cause further brain destruction and risk of rupture of the abscess; in addition it may leave undrained a loculus of the abscess.

In a few cases aspiration with local and systemic antibiotics is inadequate to control the raised intracranial pressure during the acute stage and a decompression may also be required. In addition there are other abscesses, especially those resulting from penetrating wounds or metastatic from the thorax, in which a honeycomb of small abscesses or a complicated abscess cavity may result, for which aspiration or tube drainage proves inadequate, and in this instance excision of the phlegmon in the acute stage may be indicated. Indeed, Le Beau (1946) has advocated its wider adoption, but we would restrict this operation to those few cases in which there is no other effective alternative, since it must mean sacrifice of recoverable cerebral tissue and an increased risk of resultant disability.

Thus, although one can see a general plan of treatment emerging, there is no one operation which is applicable to all acute abscesses. To improve the results of this stage therefore requires that the surgeon should have all these methods at his disposal and consider each case on its merits. Even so, the risks of rupture of the abscess into the ventricle, as shown from the deaths in this series, and the problem of multiple abscesses remain major problems. Thus in one of two recent fatal cases the patient had a left metastatic parietal abscess treated by aspiration, supplemented later by a decompression when it was clear that more was required, but at necropsy a second abscess with gross surrounding oedema was found further forward, deep in the post-frontal region, and a third on the opposite side. In the other case (not in this series) small quantities of pus were aspirated from both frontal lobes of a patient who developed signs of cerebral infection with no obvious primary focus other than an upper respiratory infection which had resolved. At necropsy it was possible to count at least 130 small abscesses scattered through the hemispheres. These two examples may be uncommon, but they serve as a salutary reminder that the treatment of the acute abscess is unlikely to become a matter of routine.

The management of the later stages is still debatable. Most abscesses can be treated by aspiration alone in the acute stage, and some surgeons believe that if further aspirations yield no pus, and provided the patient is well, no more need be done, although the majority agree that, as a final test of cure, air studies should be carried out in the quiescent stage to ensure that no loculus remains and that the lumbar C.S.F. protein and cell content have returned to normal. This policy is attractive in its simplicity and treats the abscess with the least possible damage to the surrounding brain, and, presumably, therefore lessens the risks of ultimate scarring.

There are difficulties, however. If this method alone is to be used then the tests of cure have to be rigid; most surgeons have had the experience of the well patient with only a doubtful abnormality in the ventricular air studies and yet shown subsequently to have a large abscess. Indeed, the gross displacements seen in ventriculograms and angiograms during the acute stage are due as much to the oedema around an abscess as to the amount of pus (Schurr, 1951); and subsequently a sizable collection may remain in the frontal pole or the inferior part of the temporal lobe or the cerebellum, with the production of only minimal radiographic changes. Moreover, a negative aspiration does not exclude the presence of pus: in some instances the pus becomes so thick as not to flow through the needle; or a loculus, which occurs in over 40% of abscesses, may be present and remain untapped; or the abscess may be missed altogether. Further, we have seen several examples where sudden and dangerous enlargement of an abscess has occurred in a patient previously doing well.

For these reasons, therefore, other surgeons have injected radio-opaque substances into the abscess cavity at the time of aspiration so that its subsequent fate may be followed. Detection of an unsuspected loculus or enlargement of the abscess may then allow a timely aspiration before dangerous complications supervene. For many years now this has been our policy, and we have used thorotrast. Oliver and Leese (1949), to overcome the objection of introducing a substance which is retained in the abscess wall, have suggested the use of diodone, which is absorbed; but this method does not confer the real advantage of using a radio-opaque substance—namely, to watch the progress of the abscess and be able to anticipate developments.

Thorotrast is of course a foreign material, and Taylor (1950) thinks that it may promote chronicity. It has also been suggested that it may increase the fibrous reaction around the abscess. The substance is also radioactive. We have not seen any obvious differences in the brain around an abscess at the time of excision whether it has previously been injected with thorotrast or not, nor, in the amounts used, have we so far seen any adverse effects from possible radioactivity. The substance has now been used for this purpose for about 14 years, so that presumably the risk is a small one. It is possible that in the future early diagnosis and effective antibiotics will make loculation of abscesses and other complications of management less common and that in some cases at least it will be possible to dispense with this additional guide. If so, it would be welcome, but at present one would feel that, as further improvement in results is likely to come from attention to individual details, the surgeon needs all the help he can get in a condition so dangerous and treacherous as brain abscess.

Excision

Apart from those particular abscesses which may require excision in the acute stage, there are others in which pus continues to reaccumulate despite repeated aspiration. In some instances this is related to the sensitivity of the causal organism to antibiotics, and careful bacteriology is, of course, an essential part of the aspiration–antibiotic regime. Nevertheless some of the most troublesome abscesses to deal with are those in which all cultures are persistently sterile, yet the behaviour of the abscess is evidence that the infection is anything but quiescent, and for these cases excision may be required.

How safe is the patient from recurrent infection when treated by aspiration alone and when it is realized that 40% of abscesses are multilocular? In a recent review of 295 abscess cases from Edinburgh, Manchester, and Oxford, Jooma *et al.* (1951) found that, of 88 survivors treated by aspiration or drainage alone, 7 developed recurrent infection (8%) at intervals of from 3 months to 13 years later, and they all died; among 96 patients who survived excision there were no recurrences. These figures should not be overemphasized, since much of the material was in the pre-penicillin era, and one would anticipate that, with recent developments and the more rigid standards of cure in the future, this incidence would fall. Nevertheless, it is clear that only by excision of the whole area can one be certain of ultimate cure. Provided, therefore, that it can be done without increasing the patient's disability, or materially increasing the mortality, excision requires consideration. We have followed this policy in the past. An added hope was that by removal of the abscess scar the incidence of epilepsy later on would be significantly lowered. As referred to below, this has only been partly realized. It is certainly true that, with the more successful management of the acute abscess by aspiration and antibiotics, fewer abscesses will need excision in the future, but there are still cogent reasons for advising excision of frontal,

temporal, and cerebellar abscesses when there is the slightest doubt that the infection has not resolved. In the last four years we have excised 18 abscesses (62% of the survivors from the acute stage) with no deaths.

The Primary Focus

The primary focus of infection needs to be considered in every case, although in some it has resolved before the brain abscess is evident and in others it responds to the antibiotics given during treatment. When surgery is required it is generally agreed that the brain abscess should first be brought under control. In cases of sinus infection or mastoiditis which require drainage this can then be carried out shortly afterwards with greater safety or, in other cases, deferred into the convalescent stage. More elective treatment, such as lobectomy for bronchiectasis, is usually carried out when treatment for the brain abscess is finished.

Sequelae

The late effects of cerebral abscess are three : recurrent infection, which has already been discussed, permanent neurological disability, and epilepsy. It is not proposed to discuss the permanent effects in detail except to say that grave disabilities are happily uncommon. Of the 29 survivors of the last four years, only two are permanently disabled. In one disablement was due to a decerebrate state which resulted from brain-stem compression, the patient being admitted in coma with fixed dilated pupils ; in the other patient a progressive hydrocephalus developed secondary to meningitis, which accompanied the abscess. Indeed, it is remarkable how ill and handicapped these patients can be in the acute stage and yet ultimately make good functional recoveries.

Epilepsy, however, remains the major problem in patients with abscesses of the cerebral hemispheres ; it develops in over 45% of the survivors. Indeed, with recovery from brain abscess becoming more the rule, this complication is likely to be more apparent to the surgeon in the future. Nevertheless, one should hasten to add that in most cases the attacks are infrequent, and in only a few are they of such an order as to render the patient unemployable. Its incidence is highest with multiple abscesses and with frontal abscesses, being well over 50%, and is least with temporal abscesses, 34%. Fortunately with the wide range of anticonvulsant drugs now available, the majority of patients are able to lead a normal life with perhaps an occasional attack, the tendency being for the attacks to diminish as time goes on. Nevertheless our aim should be to reduce its incidence if possible, and in this connexion there are at least two possibilities.

If one believes that it is the scar left after the abscess has healed, rather than the very fact of having had an acute infection of the brain, that is responsible for the epilepsy, then the smaller the scar the better, and it may be that, in the future, early diagnosis and antibiotics will lower its incidence. Again, if it is the scar that is responsible, would not excision lower the incidence of subsequent fits ? Jooma *et al.* (1951) showed that the incidence of epilepsy was significantly lower after excision of a frontal abscess (44%) than after treatment by aspiration or drainage alone (72%). The fits after a frontal abscess are particularly important, since they are the more dangerous as they may occur without warning, and in this site also status epilepticus is likely. Indeed, in the review by Jooma *et al.* (1951) there were five fatal cases in the late results from status epilepticus, and all were frontal abscesses. On these results, therefore, there would appear to be a good case for excision of a frontal abscess on the grounds of epilepsy alone.

Temporal lobe abscesses also show a lower incidence of epilepsy after excision (27%) compared with aspiration alone (40%), but the practical results are not so striking, since disabling epilepsy from this site is uncommon. The explanation for this improvement with excision may lie in the fact that in excising a frontal abscess one is usually able to take a more generous excision into the surrounding white matter and the track is usually excised as well as the abscess cavity, so that in effect a scar excision, as in operating for traumatic epilepsy, is not infrequently performed. To some extent this may also be true of some temporal lobe abscesses, particularly in the non-dominant hemisphere. It may therefore be that in suitable cases electrocorticography and removal, where practicable, of active foci in addition to excision of the abscess should receive further consideration. Certainly surgery directed to the epilepsy as in post-traumatic cases should yield results, either in the phase of active treatment or later on if epilepsy is declared and is proving a major handicap, which are at least comparable.

Summary and Conclusions

The advent of antibiotics, the wider recognition of the early signs of intracranial infection, and the use of ancillary methods of investigation such as angiography and electroencephalography have all contributed to the improved results in the treatment of brain abscess. In the series of 36 cases reported here over the last four years there were seven deaths, a mortality of 19.4%. Prevention, however, is better than cure, and the several ways by which this may be partly achieved are outlined.

Intermittent aspiration of the abscess combined with local and systemic antibiotics, usually penicillin, is recommended as the treatment of choice in the acute stage, but formal decompression may be required in certain cases. The indications for excision of the abscess both in the acute and in the later stages are also discussed.

The various ancillary methods of investigation are valuable both in differential diagnosis and in the management of a brain abscess, but it is wise to remember that in some instances the results they yield are at the best equivocal and that in dealing with intracranial infection a sound clinical appreciation of the case remains the first essential.

There are at least two major problems which call for further study. One is the management of the metastatic abscess, especially that from the chest. Frequently multiple, often multilocular, neither easy to diagnose or locate nor necessarily occurring in sites readily accessible to surgery, it remains a challenge to the surgeon. The other problem is the high incidence of epilepsy (45%) among the survivors from brain abscess. It may be that its incidence in the future will fall with improved methods of treatment in the acute stage, but the possibilities of surgical excision with the help of electrocorticography, particularly in the frontal region, merit further attention.

The recent advances in the management of brain abscess should be a stimulus to lower the mortality further and to improve the quality of the result.

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CHRONIC LEG ULCERS IN NON-THROMBOCYTOPENIC PURPURA

BY

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Apart from a probable case reported by Osler in 1914, we have been unable to find in the literature any account of leg ulcers occurring in non-thrombocytopenic purpura. As we have seen three such cases in the last two years we think it worth while to report them.

Case 1

A married butcher aged 57 first came to the out-patient department in December, 1953, with a complaint of swollen joints for 10 days. He had a history of developing painful swollen joints 30 years previously while serving in the Army in Egypt. They became normal in six months with no residual disability (he was later a racing cyclist). In 1943 he was treated for a prolapsed intervertebral disk by laminectomy, and post-operatively developed a thrombosis of the left small saphenous vein. Following this episode he was subject to mild ankle oedema after standing for prolonged periods, but no other disability. His present illness began suddenly with swelling of the right knee and a blotchy rash on the skin surrounding that joint. In the course of the next few days, the left knee, right ankle, both elbows, and right wrist also became swollen and painful. At the same time the rash spread over both legs, and, to a less extent, on the trunk. It came as a series of crops, and the patient noticed that the spots were raised above the skin and did not itch. There was no past history of any allergic disorder and he had never taken any drugs.

On examination he was well nourished, with a purpuric rash in which there was an urticarial component, richly distributed over the legs, buttocks, and extensor surfaces of the arms, and more sparsely over the trunk. Several joints were swollen and painful on movement—namely, both knees, both ankles, both elbows, both wrists, and the left shoulder. The spleen was not palpable. Small, discrete, painless lymph nodes were felt in the occipital, the cervical, and both axillary regions. The left small saphenous vein was represented by a firm cord-like structure, which was evidently the sequel of his post-operative venous thrombosis ten years earlier. The left long saphenous vein was prominent, but there was no evidence of varicosity; and the skin was healthy apart from the purpura. In other respects, physical examination was negative. A diagnosis of Schönlein–Henoch purpura was made, and he was admitted to hospital for further investigation and treatment.

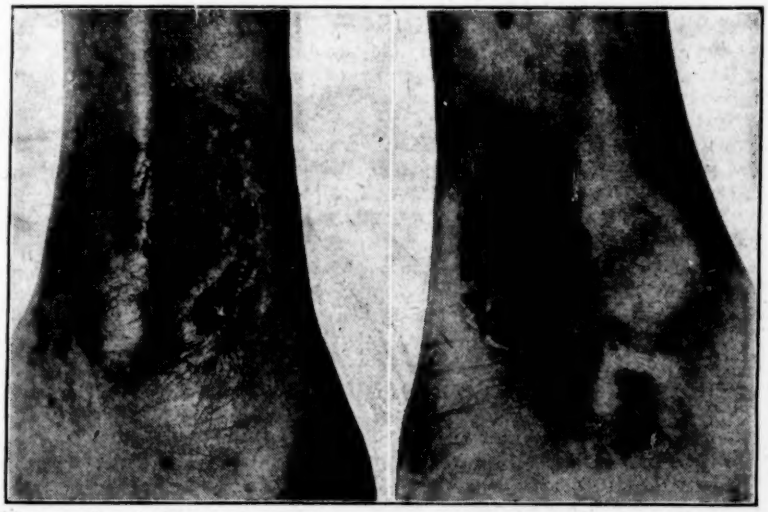
While in hospital he was found to have a persistent albuminuria with occasional red blood cells. Apart from a moderately raised E.S.R. (17 mm. in one hour by the Wintrobe method) his blood picture was in all respects normal—namely, platelets, 557,000 per c.mm.; red cells, 4,810,000 per c.mm.; haemoglobin, 14.4 g. per 100 ml.; white cells, 3,900 per c.mm. on one occasion and 8,600 on another, with a normal differential distribution. The bleeding-time (Duke) was one minute and the clotting-time (Lee and White) 6½ minutes. The one-stage prothrombin time was normal. The report on a bone-marrow examination by Dr. S. T. E. Callender was as follows: "The marrow is moderately cellular. Eosinophils are fairly frequent. Apart from this, there is no definite abnormality." The tourniquet test caused increase in size of the existing purpuric lesions, but no fresh petechiae occurred.

During his stay in hospital he developed cramp-like abdominal pain and was found to have large amounts of occult blood in the stools. Thus the classical picture of anaphylactoid purpura was complete.

He was in hospital for two months following this admission. During this time he received treatment with cortisone by mouth in a total dose of 4.2 g. over a period of three weeks. The disease was unaffected. The purpura persisted, fresh crops of lesions occurring intermittently, and there was no notable improvement in his joints. He later showed gradual improvement, with his joints returning slowly to normal and the petechial rash diminishing. As already mentioned, gross albuminuria persisted, but he remained normotensive and his blood urea was normal. The tourniquet test became strongly positive during the latter part of his stay in hospital. He was discharged from hospital on February 16, 1954, with no joint symptoms or bowel symptoms, but with a scanty petechial eruption.

He was then regularly seen in the out-patient department. He continued to have recurrent crops of purpura, mainly over the legs, with both ankles particularly affected. In March, 1954, he developed an ulcer of the left ankle at the site of a patch of profuse purpura. The ulcer persisted and became more extensive, and he was readmitted to hospital in June. At that time there were two shallow ulcers, each about 2.5 cm. in diameter, in the region of the left medial malleolus and one shallow ulcer about 7 by 1 cm. in the region of the left lateral malleolus. There was a fading purpuric eruption on the legs. Investigations at this time gave the following results: haemoglobin, 13.6 g. per 100 ml.; white cells, 6,000 per c.mm.; platelets, 248,000 per c.mm. The urine contained albumin, red blood cells, and occasional granular casts. The blood urea was 35 mg. per 100 ml.; plasma proteins, 5.4 g. per 100 ml., with albumin 3.2 g. The tourniquet test was strongly positive on admission and later became negative. With rest in bed the ulcers healed and he was discharged in 24 days, having had no fresh purpuric eruption.

Shortly after leaving hospital fresh purpuric crops occurred and he had occasional abdominal pain and painful joints. By September the purpura had become more severe and ulceration of the left ankle had recurred (see Fig.). He was readmitted to hospital, where rest in bed and eusol



Photographs of Case 1, showing large areas of ulceration and surrounding purpuric lesions.

dressings brought improvement of the ulcers. His purpura became less severe, but albuminuria persisted. When last seen, in October, the ulcers were covered by scabs and appeared to be healing well. The purpura was then absent.

Comment.—The history, physical signs, and results of investigation leave no doubt that this patient suffers from Schönlein–Henoch purpura. The only doubt that exists is whether the venous thrombosis he sustained ten years previously played any large part in the genesis of his leg ulceration. We do not think this likely, for the following reasons. He had been working for those ten years as a butcher, standing a great deal, with negligible symptoms. The ulceration occurred when he was living the life of a semi-invalid involving less need for a perfect venous return. Secondly, the ulcers were not surrounded by the eczematous changes in the skin which almost invariably accompany varicose ulceration. Finally, the ulceration occurred at a site where the purpura was so dense as to be confluent.

Case 2

A clergyman aged 62 was under our care for severe rheumatoid arthritis, which began in 1934, and later made him dependent upon an electric chair for mobility. From April, 1952, until March, 1953, we treated him with large doses of sodium salicylate with relief of his joint symptoms, but only at the expense of troublesome deafness. In March, 1953, salicylate therapy was stopped and he was put on to treatment with phenylbutazone by mouth in a dose of 200 mg. four times a day. He continued on this therapy, and on August 13 he noticed purple spots on his legs. The eruption became more profuse and he was admitted to hospital ten days later.

On examination at that time he had a profuse purpuric eruption covering both legs, buttocks, and the extensor surfaces of both arms. His joints showed evidence of long-standing rheumatoid arthritis. The spleen was not felt. All other systems were normal. Investigations gave the following: platelets, 745,000 per c.mm.; red blood cells, 4,380,000 per c.mm.; haemoglobin, 14.4 g. per 100 ml.; white cells, 8,000 per c.mm., with a normal differential distribution; bleeding time (Duke), 3½ minutes; E.S.R., 32 mm. in one hour. The tourniquet test was negative. The phenylbutazone had been discontinued before admission on the assumption that it was the agent responsible for the purpura and he was treated with calcium aspirin. The purpura appeared to be subsiding and he left hospital after one week, being anxious to return to his parish.

When seen in the out-patient department a week later several of the purpuric patches on his legs appeared to be about to slough and arrangements were made for his readmission. By the time he was admitted to hospital, a week later, painful ulcers had developed on his legs, three on the right and two on the left. On the anterior surface of the shins there were two ulcers on the right side and one on the left. Both medial malleoli were the site of ulceration. The symmetrical distribution of the lesions was notable. The surrounding skin was inflamed. At this time the purpuric eruption was confined to the legs below the knees. The results of investigations were similar to those on his previous admission, except that the tourniquet test had become positive.

The ulcers were treated with eusol dressings, and after three weeks complete healing had occurred and he was discharged from hospital on October 5.

A week later, when seen as an out-patient, the ulcers of the legs had recurred. He was unwilling to be admitted to hospital, but was seen frequently as an out-patient. From October, 1953, until February, 1954, he had several severe exacerbations of the purpura, with occasional ecchymoses. Throughout this period the ulcers repeatedly healed and broke down; they were extremely painful. Complete bed rest at home assisted the ulcers to heal, but made the stiffness of his joints much worse, so that a satisfactory regime was difficult to achieve.

In April he overcame his reluctance to desert his parish and was readmitted to hospital, where it was hoped to combine treatment in bed with active physiotherapy for his joints. On examination there were fresh petechiae of the legs superimposed on areas of fading purpura. There were several ulcers of both legs, about 2.5 cm. in diameter, from which came a purulent discharge. They were treated with eusol dressings and later with tulle gras, and healed well in the course of the next few weeks. The results of investigations on this admission were: platelets, 343,000 per c.mm.; red cells, 4,290,000 per c.mm.; haemoglobin, 12.8 g.; white cells, 6,000 per c.mm., with a normal differential distribution; bleeding-time (Duke), two minutes; clotting-time (Lee and White), eight minutes; one-stage prothrombin time, normal; E.S.R. (Westergren), 52 mm. in one hour. A patch test with phenylbutazone was negative.

He was discharged from hospital in June. He has been seen since and the ulcers have not returned.

Comment.—There is no doubt that in this patient the purpura was responsible for the ulceration of the legs. The cause of the purpura is uncertain, but it is highly probable that it was a toxic effect of phenylbutazone. Non-thrombocytopenic purpura is a rare complication of phenylbutazone therapy, occurring in 4 out of 800 patients studied by Kuzell *et al.* (1953).

Case 3

A housewife aged 66 attended the skin department, Radcliffe Infirmary, in August, 1952, complaining of a painful localized swelling on the inner side of the right lower leg which had been present for three months. Three weeks later a purpuric rash developed on both arms, and later became generalized. She was referred to us and was found to have the following signs. There was a generalized purpuric rash, which was most pronounced on the extensor surfaces of the arms and on the trunk. The petechiae were discrete and raised above the surface. There was an indurated erythematous area, about 7.5 cm. in diameter, on the front of each lower leg. The distribution was symmetrical. Each area contained several ulcers which were covered with hard scabs. Apart from a palpable liver, there was no other abnormality on clinical examination.

She was later admitted to hospital, when investigations were essentially negative—namely, platelets varied from 193,000 up to 667,000 per c.mm.; haemoglobin, 11.7 g. per 100 ml.; red cells, 4,200,000 per c.mm.; white cells, 7,200 per c.mm., with a normal differential distribution; bleeding-time (Duke), 2½ minutes; clotting-time (Lee and White), 6½ minutes; one-stage prothrombin time, normal; clot retraction (Marfarlane), 50% (normal); plasma proteins, normal. Liver function tests: plasma bilirubin, 0.4 mg. per 100 ml.; flocculation tests, normal. Coombs test, the Wassermann and Kahn reactions, and the tourniquet test were negative.

She was discharged after one week at her own request to care for her invalid husband, with no change in her clinical state. In December, when she was seen as an out-patient, the purpura was still present but less intense. The ulcerated area on her left leg had healed, but that on the right was still active. Blood investigations were negative, with the exception of the E.S.R., which was 102 mm. in one hour (Westergren). She refused to enter hospital for cortisone therapy and failed to attend the out-patient department until five months later (May, 1953). Her purpuric rash had by then completely disappeared, and the ulcers of the legs were healed. She refused to have a blood examination, so that we do not know whether the E.S.R. had become normal.

According to her family doctor, she remained well and free of purpura until August, 1953, when he was called in because she had died suddenly in her bed at night. The cause of death was certified as coronary thrombosis.

Comment.—It is probable that this patient's non-thrombocytopenic purpura was an example of so-called anaphylactoid purpura. It is noteworthy that she developed indurated areas of both legs before the onset of the purpura and that these subsequently ulcerated. The most reasonable conjecture would appear to be that both the indurated areas and the purpura were independent manifestations of the same underlying allergic state.

Discussion

We have no doubt that leg ulcers which persist for several months are decidedly rare in non-thrombocytopenic purpura. Davis (1948) reported 44 cases of Schönlein–Henoch purpura without mentioning ulceration among the skin lesions. Gendel (1948), in a review of the reported cases of chronic leg ulcer in diseases of the blood, likewise does not mention this association. Chronic leg ulcers have been observed in a number of blood dyscrasias, such as congenital haemolytic anaemia, sickle-cell anaemia, polycythaemia, splenic anaemia, thrombocytopenic purpura, and Gaucher's disease, in all of which splenomegaly is a frequent finding, and it has been usual to attribute the liability to leg ulceration to some abnormal action of the spleen.

In thrombocytopenic purpura the occurrence of leg ulcers is also rare, being reported for the first time by Witts (1942). It is worth mentioning that the two cases which he reported did not show splenomegaly and that splenectomy carried out on one of them had no effect upon the ulcers.

The only reference to the occurrence of leg ulcers in non-thrombocytopenic purpura appears to be the one made by Osler (1914), who states that necrotic areas may occur in purpuric states. "When a localized infiltration of blood and serum is very intense in a patch [of purpura] of considerable size, bullae form and the superficial layers of skin necrose, leaving an open ulcer." In describing a number of cases, he includes that of a girl aged 14 years who was treated in the Radcliffe Infirmary for Henoch's purpura. Although no platelet count is recorded, there seems to be little doubt from the clinical description that the diagnosis was correct. She suffered from pains in the legs, purpura, haematuria, and albuminuria. There were extensive haemorrhagic lesions on the legs, many of which broke down, leaving ulcers which took a long time to heal.

Osler's description of the genesis of skin ulceration in purpura is an apt account of how ulceration developed in Cases 1 and 2 of the present series. In Case 1 there was the possibility that a previous venous thrombosis may have been an additional cause, but we have given reasons for concluding that this was not a major element. Case 3 is totally different in that ulceration developed in indurated erythematous areas which appeared on the legs some months before the onset of purpura.

Summary

Three cases of leg ulceration in non-thrombocytopenic purpura are described.

The aetiology of the purpura was different in the three cases, one being a classical example of Schönlein–Henoch purpura, one a toxic purpura, presumably due to phenylbutazone, and one possibly a manifestation of an obscure allergic state.

We are grateful to Professor L. J. Witts, Nuffield Professor of Clinical Medicine, Oxford, for permission to publish these cases.

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POST-PUERPERAL RECURRENT DEPRESSION

BY

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The purpose of this paper is to draw the attention of practitioners to a form of illness which is not uncommon and which is important, not only because of the distress and incapacity which it inflicts upon the patient, but also because of the repercussions which it produces within the family group.

There are few references in the literature to the sequelae of puerperal depression. Hemphill (1952) mentions "a periodic affective illness . . . after childbirth, with subsequent attacks related to menstruation." There is little doubt that he had in mind patients such as those I am about to describe. Linford Rees (1953) has observed that "in some patients with children it was found that premenstrual tension had developed or had become worse after childbirth." These, however, are merely the passing remarks of writers who were dealing with a different theme.

Summaries of seven cases are here presented of women with a history of puerperal depressive illness some years previously, following which full health has never been regained and recurrent sharp phases of depression, tension, and irritability have occurred, with short interludes of comparative well-being. The resemblances which these patients bear to one another in their history and symptomatology appear to class them as a distinct group, to which it is proposed to attach the name "post-puerperal recurrent depression."

These patients tend to take a moral rather than a medical standpoint towards the alteration in their feelings and behaviour. While they are not rare as visitors to psychiatric clinics (5 in the last 300 new patients seen), it is probable that many of them do not seek medical advice, or, if they do, are not sent for psychiatric examination.

Typical History.—A woman of pyknic build and cyclothymic temperament suffers from a relatively mild puerperal depressive illness in her thirties or late twenties. Emotional stress or an infective illness may have coincided with the puerperium. She appears to make a good recovery from her depression, but within a short time becomes unwell again. Thenceforward, for years, she suffers from recurrent phases of depression, irritability, and tension, with phobias, obsessive fears, or hypochondriasis. The severity of her symptoms is related to the menstrual cycle, usually the premenstrual phase. Irregularity of the menses is a concomitant feature. Her moodiness, unpredictability, and loss of temper are reacted to by the children and the husband, the family atmosphere becomes clouded and unstable, and the family ceases to function as a unified group.

Case 1

Observation period, All Saints' Clinic, seven years; personal observation, two years. Large-framed woman of pyknic build, aged 38. Facial pallor. Expression morose. Para-3.

Her present illness began in 1943; after birth of her second child lacked confidence to go out and about. Within a few days of birth of third child in October, 1945, became depressed and agitated. Had a mild febrile illness attributed to throat infection at this time. Three attacks of

quinsy in subsequent eight weeks. Remained acutely disturbed for three months. Something in her head seemed to say, "Put the baby on the fire." Impulses to strangle the child or to throw her out of the window or to jump out of the window herself. "Not real voices, but thoughts in her mind."

Admitted to Midland Nerve Hospital in tenth month of puerperium. In hospital nine weeks. Treated by sedation. Acute symptoms subsided. Attended as out-patient at Midland Nerve Hospital subsequently for two months, but developed pneumonia. Stopped going.

Referred to All Saints' Clinic in August, 1946. Still plagued by impulses to strangle child. Received E.C.T., six shocks, October, 1946. No lasting improvement. Termination of pregnancy and sterilization, 1948. Attended until August, 1950, receiving analytical psychotherapy. Appreciated the opportunity to express her fears but did not lose strangling ideas, and continued to have depressed moods.

Returned to all Saints' Clinic April 18, 1952. Complained of intermittent feelings of hopelessness; lack of inclination to do things; marked irritability; depression, lasting for a few days at a time, accompanied by impulses to strangle children or throw them out of the window, to commit suicide, to smash crockery, to smack people in the face, etc. Symptoms most marked nine or ten days after start of menstrual period. Severity fluctuates at other times, and she has freedom from symptoms for two to three days at a time.

Response to Treatment.—Acetylcholine shock, 1953; no appreciable effect. Dextro-amphetamine, 10 mg., and amylobarbitone, 1 gr. (65 mg.) b.d., and supportive therapy. Moderate symptomatic benefit. Decrease in irritability and depression, and in intensity and frequency of obsessional impulses, together with some all-round improvement in the family atmosphere. Withdrawal of medication leads to immediate worsening of symptoms. Weight remains fairly constant at 10 st. 1 lb. (64 kg.).

Comment.—Severe case. Good spells infrequent and last only a day or two. Anxieties and febrile illnesses during puerperium. Symptoms related to menstrual cycle. Patient's illness had led to serious repercussions within the family.

Case 2

Personal observation, one year. Stoutish woman of pyknic build, aged 39, para-1; florid complexion; anxious expression.

Present Illness.—Seven years ago, when eight months pregnant, she developed right-sided Bell's palsy. Much worry about this. Prolonged labour—forceps delivery. Urinary infection with high fever for first week of puerperium. For next three to six months had to fight against feelings of depression and lack of energy. Got a bad fright when baby was 8 weeks old, when she found a cat lying on his face in pram. Feared he was smothered. Depression gradually diminished, but she has never felt quite well. Feelings of weakness; "no life" in her legs; avoids company; giddiness and fears of falling; lacks confidence to do things; sensitive about residual facial weakness; irritability and intolerance of noise. Symptoms vary in severity from day to day. Much worse before and during menstrual period. Gradual improvement in past one to two years, but still much handicapped before start of treatment.

Environmental Factors.—Strict mother, but no family strife. Husband's untidiness annoys her, but on the whole the relationship is good.

Previous Health and Personality.—Very active, energetic, and sociable. Very particular and fastidious regarding house and personal appearance. No previous breakdown. No severe physical illnesses. Mild chronic bronchitis.

Response to Treatment.—Excellent symptomatic response to dextro-amphetamine, 5 mg. b.d., amylobarbitone, 1 gr. (65 mg.) b.d. Feels well. Has taken a part-time job. Actively seeks company. Symptoms return if tablets are withdrawn temporarily.

Comment.—Moderately severe case. Good spells last only a day or two. Anxiety over facial palsy and acute infection during puerperium. Symptoms related to menstrual cycle. Tendency to spontaneous improvement in recent years. Dramatic response to dextro-amphetamine.

Case 3

Observation period, All Saints' Clinic, 10 years; personal observation, two years+. Large florid-complexioned woman of pyknic build; para-1, aged 47.

Present Illness.—Began 11 years ago when her baby was about 7 weeks old. Depressed for six months; then improved but has never been quite well since. Feelings of depression accompanied by "dislike" of her husband and child; general irritability; fears of becoming insane, committing suicide, or attacking others; fatigability; discomfort, sometimes amounting to pain, in left side of head and face. Symptoms begin abruptly, last for one to three weeks and disappear rapidly. They tend to begin premenstrually and to lift soon after period ends. In past 12 months increased tendency to flushing and weeping (? menopausal).

Environmental Factors.—Much difficulty with interfering mother-in-law, who lived with patient and family. This relative's removal following a cerebral thrombosis had no appreciable effect on patient's symptoms.

Family History.—Nothing relevant.

Previous Health.—Hard-working, capable, sociable woman. Always inclined to be over-emotional and to take things too much to heart. Depressive breakdown of two to three months' duration following father's desertion of mother. No other history of psychiatric symptoms.

Physical Health.—M.P.s regular 4/28 until past six months, during which there have been floodings and amenorrhoea of up to three months. No serious illnesses. *Present physical status:* Moderate obesity; B.P. 120/85; no signs of disease found.

Response to Treatment.—No appreciable response to hexoestrol. Moderate symptomatic response to dextro-amphetamine. Time incidence of symptoms as before, but severity much decreased.

Comment.—Moderately severe case. Good spells of up to six weeks' duration. Symptoms related to menstrual cycle. Lability rather marked: probably related to menopause. Aggravating factors in environment, but modification of these has not led to change in patient's state.

Case 4

Personal observation, eight months. Large woman of pyknic build, aged 43; para-2 (children 7½, 3½).

Present Illness.—Marked irritability, with temper loss and fears of harming children. Feelings of acute despondence: "life not worth living." Tendency to avoid people. Much worse for seven days premenstrually. Good spells in which symptoms are practically absent for two to three days. Blames "selfishness" on her own part and failure to accept move to a city which she dislikes. Did not realize that she was unwell or that there was any possibility of medical treatment. Husband responsible for her seeing psychiatrist in first instance.

Onset.—Became depressed within two weeks of birth of first child seven and a half years ago. Improved after three to four months, but has never been quite herself since. Symptoms as above in comparatively mild form. Considerably worse since birth of second child.

Environmental Factors.—None other than ordinary family responsibilities. Husband extremely forbearing and considerate. Excellent home conditions.

Previous Health.—Excellent. Highly capable, sociable woman of more than ordinary intellect. Good-humoured and philosophical. No neurotic traits of any kind before

onset of present illness. *Physical Health.*—M.P.s regular, 3-4/28; no illnesses. *Present physical status:* excellent.

Response to Treatment.—Complete alleviation of symptoms on dextro-amphetamine, 10 mg. in morning, 5 mg. at noon. Retrospectively realizes the degree of her disorder. Husband (specialist physician) describes effect of dextro-amphetamine as "most dramatic" and compares it with the effect of insulin in diabetics. Continuous medication is not now necessary. Since initial week's treatment, attacks of depression have been less frequent and have yielded to renewed medication. Very great improvement in family relationships since patient has been receiving treatment, particularly in behaviour of youngest child, who previously was tending to become capricious and unruly.

Comment.—Moderately severe case. Good spells last only a few days. Environment very good. A further childbirth after symptoms had begun in mild form had a pronounced aggravating effect. Symptoms related to menstrual cycle. Patient's state tended to disorganize family and create new difficulties. Dramatic response to dextro-amphetamine. Improvement maintained after drug was withdrawn.

Case 5

Observation period, All Saints' Clinic, four years; personal observation, one year. Aged 26; para-2. Average build; good colour; mildly anxious expression.

Present Illness.—Became depressed while in hospital after birth of second child four years ago. Had fears that the nurse would drop him. Became agitated on return home, wept frequently, could not sleep. Eventually told husband that she had fears of murdering the children, or would commit suicide to prevent herself harming them. Also fears that a man would break into the house and kill her. Depression decreased gradually and obsessive fears waned in severity in subsequent three months. Since then she has had frequent attacks of depression and irritability with return of obsessive fears of variable intensity. Periods of freedom from symptoms for up to three months. Menses irregular, 6/20-30. During ill phases feels worse before and during M.P. and a little better after menstruation.

Environmental Factors.—Difficulties with husband's family at time of onset but not recently. Husband loyal to her. Elder child very active and mischievous at time of onset. Patient has turned to religion for comfort, with some success recently.

Previous Health and Personality.—Happy person, easy-going; good mixer. Menses regular until last childbirth. No serious physical illnesses. Mild depression, lasting for three to four months after birth of first child. Recovered spontaneously and completely. *Present physical status:* Healthy; B.P., 128/80.

Response to Treatment.—E.C.T. June, 1953 (six shocks). No appreciable effect. Dextro-amphetamine, 5–10 mg. b.d. Regular medication since July, 1953. Good symptomatic response. Took a part-time job in November, 1953, on own initiative, but had to stop after six weeks because it interfered too much with household management. Symptoms occur as before, but are very much milder and do not constitute a serious handicap.

Comment.—Relatively mild case. Periods of freedom up to three months. Symptoms related to menstrual cycle. Domestic worry during puerperium. Age of onset (22) younger than the majority in present series.

Case 6

Observation period, three months. Aged 37; para-1. Pyknic build; moderate obesity; fresh complexion.

Present Illness.—Began nine years ago, when baby was 7 weeks old. Husband was badly wounded in France at that time and patient had to make "an awful journey" to Portsmouth with baby on the breast. She became depressed and indecisive, and remained so for several months. Since then she has had recurrent episodes of depression and irritability lasting for two to four months, interspersed with periods of one to two months, during which she feels comparatively well. During the spells finds everything too much trouble. Housework gets her down. She has a lump in the throat, poor appetite, and broken sleep. She sweats a lot; her legs feel like jelly, and she has palpitation and beatings in her head and ears. Annoyed with herself for being as she is. Periods irregular in duration and amount. Husband thinks that before and just after periods she is worse.

Environmental Factors.—Husband irritable and changeable since the war, but has improved a great deal in the past two years. Patient's symptoms are apparently unaffected, however.

Previous Health and Personality.—Always rather sensitive and easily hurt, but fond of sport as a girl and liked parties and dances. Fastidious; likes to do things well; inclined to be house-proud. Symptomless mitral valvular lesion, of which she is aware. *Present physical status:* moderate obesity; rough systolic murmur in mitral area; well compensated circulation.

Response to Treatment.—Symptom-free since receiving dextro-amphetamine, 5 mg. b.d., and amylobarbitone, 1 gr. (65 mg.), over past two months, but may be in spontaneous remission.

Comment.—Relatively mild case. Good spells of one to two months' duration. Severe emotional stress during puerperium. Symptoms related to menstrual cycle.

Case 7

Personal observation, three months. Aged 42; para-7. Pyknic build; moderate obesity; looks rather older than her years.

Present Illness.—Two miscarriages at three months when aged 31. Periods scanty since then. No further pregnancies. "Like this ever since." Feels depressed and cries readily; but had bright spells of a few days at a time. Irritable, restless, wants to keep changing all the time. Headaches off and on—"a pressing-down and thumping on top of the head." Gets excited easily and has palpitation at such times. Occasional attacks of diarrhoea, flatulence, and indigestion. Sleeps fairly well, but feels tired in the morning. Face puffy below the eyes in the morning. In recent years: thinness about the chest, fatter about abdomen and hips.

Environmental Factors.—Heavy family responsibilities and financial hardship.

Family History.—One brother has had a depressive attack.

Previous Health and Personality.—Nervous as a child. Intelligent at school. Active, sociable, hard-working as an adult. Depressive illness of moderate severity, starting in fourth puerperium at age 23. Treated in hospital. Spontaneous recovery in six months. *Present Physical Status:* Moderate obesity; no signs of disease found; B.P., 140/88; menses brief and scanty (1/28).

Response to Treatment.—Dextro-amphetamine, 5 mg. b.d., amylobarbitone, 1 gr. (65 mg.) b.d. Marked and immediate improvement. "Before, I had no interest in anything. I can keep on at anything now. I don't seem to get that irritable feeling or that depression so much. I wish I'd had these tablets before. I've had this trouble for years."

Comment.—Moderately severe case. Good spells of a few days' duration. History of depression (? puerperal) preceding onset of present illness by eight years. Present illness followed miscarriages, but course and clinical picture essentially similar to puerperal cases. Symptoms not clearly related to menstrual cycle, but menses scanty since onset.

Points in Clinical Findings

A digest of the above clinical data brings out some interesting points.

The average age of onset in these seven patients is 30. If one excludes the youngest patient (22 at onset) the average age for the others is 32.

There is a history of stress during the puerperium in six patients; emotional stress in all of these, plus an infective

illness in two. In one patient there was a history of a previous non-puerperal depressive attack. In two patients symptoms had begun in mild form during one puerperium and a further childbirth had had an aggravating effect. In one case the starting-point had been an abortion at three months.

Patients with milder symptoms enjoyed well-being for periods up to three months. Those with more severe symptoms had only occasional "good days."

There was a relation of symptoms to the menstrual cycle in six patients; in five of these there was worsening during the premenstrual phase, in one worsening at ovulation time.

Irregularity of menstruation or oligomenorrhoea of the same duration as the psychiatric symptoms occurred in five patients.

There was clinical evidence of disturbed water balance in two patients.

In the majority the pre-morbid personality showed some cyclothymic traits, but on the whole these women were well-integrated people who had reached a good all-round level before they fell ill.

Discussion

Diagnosis.—The history of puerperal depression as the starting-point of the illness could be established without leading questions in all these patients, but, largely on account of their preoccupation with current problems, some persistence was necessary to get them to give a satisfactory account of the onset. This history is the main pointer to the diagnosis, since the symptoms themselves are not of a specific kind.

Differential Diagnosis.—The majority of these patients had been regarded by their family doctors as psychoneurotic, one or two as "ordinary" depressives. The personality, history, and symptomatology are, however, quite different from what is characteristic of the neurotic: "ordinary" recurrent depressives usually enjoy much longer symptom-free periods than do these post-puerperal patients. Depression in psychopaths and epileptics may have some resemblance in frequency and brief duration of attacks to what is found in the post-puerperal group, but the history of fits or of lifelong personality disorder suffices to distinguish them.

Aetiology.—In the absence of knowledge of the nature of the depressive state and of the neuro-endocrine effects of the puerperal involutional processes one cannot go far towards a physiological understanding of this disorder, or, for that matter, of those puerperal depressions which run a self-limiting course. The condition may, on clinical grounds, be regarded as a variant of manic-depressive disorder combined with features of the premenstrual tension syndrome. Pre-menstrual tension and its relation to disturbed water metabolism has been adequately discussed by Stieglitz and Kimble (1949), Bickers and Woods (1951), and Linford Rees (1953). Hemphill (1953) has referred to "the acute alteration in the physiological state associated with childbirth operating on a susceptible personality" . . . appearing "to activate . . . puerperal depression." Rees's (1953) remark about the precipitation of premenstrual tension by the puerperium has already been quoted. On the basis of the material under consideration it would appear that two alternative interpretations might be made: either that a relatively irreversible reinforcement of the manic-depressive diathesis may occur, or that some other alteration in the constitution—for example, tendency to premenstrual water intoxication—may supervene which increases susceptibility to depressive attacks.

Course and Prognosis.—No women of post-menopausal age have been seen suffering from this illness, and the possibility exists that the menopause may lead to an improvement in these patients. Two patients had shown slow spontaneous improvement over the years but were still far from recovery. In the others there had been little or no change, even when the environment had improved.

Response to Treatment.—Dextro-amphetamine produces a dramatic symptomatic relief in some patients and a useful improvement in others. Acetylcholine shock therapy had no effect on the one patient on whom it was tried. Electric convulsion therapy produced no lasting benefit on two patients who received it. Its known effect in alleviating a depressive attack without touching the diathesis may explain its failure here. Hormone therapy and measures to control water-retention have not been adequately explored.

Summary

A syndrome is described in which recurrent depression, irritability, and tension dating from an attack of mild but typical puerperal depression are the leading features.

The symptoms tend to be worse in the premenstrual phase.

A pyknic body build appears to be typical.

The condition follows a chronic course, and treatment is problematical.

Serious disturbance of the life of the family is a secondary effect of the illness.

The condition appears to be related to the premenstrual tension syndrome.

It is a common and important condition and is at present insufficiently recognized.

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ALPHA-PROTHROMBOPLASTIN DEFICIENCIES (HAEMOPHILIA) OF DIFFERING DEGREES IN A MOTHER AND SON

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There are a number of reports in which female bleeders are described as haemophiliacs. However, it has been realized that, despite clinical similarity, the "haemophilic" syndrome can be caused either by a deficiency of any one of several essential clotting factors, or it can be due to the presence of an inhibitor of blood-clotting. Although haemophilia has been connected by most workers with a derangement of the blood thromboplastin complex, in the last few years it has been found that it consists of several components. Clinical manifestations are therefore insufficient to establish the diagnosis of haemophilia. As the various components of the clotting system have been separated from plasma,

it seems logical to apply biochemical nomenclature to haemorrhagic disorders. Since it is customary to refer to hypoprothrombinaemia or to fibrinogenopenia it has been suggested (Fantl and Sawers, 1954a, 1954b) that haemophilia be called alpha-prothromboplastin deficiency, and the related condition, known as P.T.C. deficiency (Aggeler *et al.*, 1952) or Christmas disease (Biggs *et al.*, 1952), be called beta-prothromboplastin deficiency.

Laboratory investigations are necessary to find the particular deficiency. Blood from alpha-prothromboplastin-deficient patients shows several characteristic features. There is a slightly to grossly delayed whole-blood clotting time, which can be corrected *in vitro* by the addition of blood or plasma from a beta-prothromboplastin-deficient patient. If this is not available, such plasma can be prepared from normal human oxalated plasma by adsorbing the beta factor with alumina gel or barium sulphate (Ba plasma). Further, the patient's deficiency should not be corrected by the addition of stored plasma or serum which are devoid of the alpha factor. Another indication of the clotting defect is the prothrombin content remaining in serum after clotting has taken place. In the serum of normal persons this is very low, whereas thromboplastin-deficient blood examined 60–150 minutes after clotting contains more than 12% of the plasma prothrombin. In addition to the tests which are necessary to establish the diagnosis it is desirable to estimate the degree of the deficiency. This can be carried out by the determination of the rate of thrombin formation in diluted blood in the presence of pyrocatechol, which acts as a thrombin stabilizer. The theoretical basis and the experimental details for this technique have been given by Fantl (1954b).

The Investigation

The clinical examination and laboratory investigation of a mother and her son, which we record here, show that both are suffering from alpha-prothromboplastin deficiency, although of differing degree. The mother is in fact a true haemophiliac.

Mrs. M, aged 30, stated that she bruised much more easily and extensively than the other members of her family. She suffered heavy menstrual loss, the bleeding often lasting eight days. She bled consistently after teeth extractions, the oozing often beginning one week after extraction and continuing for another week. After the birth of each of her two children she had severe post-partum haemorrhage, which on the first occasion lasted one week and was associated with a cervical tear. She submitted to radium sterilization, following which she again bled severely and required a blood transfusion. Apart from the haemorrhagic tendency no other pathological lesions have been found. So far as it was possible to trace her family history, no abnormal haemorrhages were noted except for a vague story of excessive bleeding after teeth extractions in her maternal great-uncle, who died at the age of 80 (see Fig. 1).

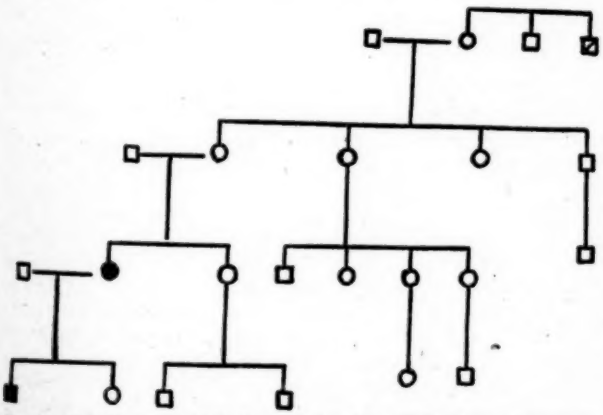

FIG. 1.—Family tree. ● Refers to Mrs. M. ■ Refers to her son. ☑ Refers to the maternal great-uncle of Mrs. M, who is believed to have had abnormal haemorrhages. All the other relatives gave no indication of abnormal bleeding.

Mrs. M's daughter, born in 1951, does not show any bleeding tendency. Her son was born in 1952. He was first admitted to the Royal Alexandra Hospital for Children, Sydney, at the age of 14 months with severe bruising of head and buttocks. The parents stated that after circumcision at the age of 10 days the child bled for one week, and could only be controlled with difficulty with several blood transfusions. Repeated attacks of extensive bruising had been observed since the age of 6 months. Primary dentition was accompanied by oozing from the gums. The child was admitted to the above hospital six times with bleeding episodes, and received several blood transfusions. The clinical symptoms of the mother are much less severe than those of her son. Table I gives the results of laboratory investigations.

TABLE I.—*Laboratory Data of the Haemorrhagic Defect of Mother and Son*

	Mother	Son	Normal
Whole-blood clotting time of 2 ml. at 37° C. in minutes ..	14–30	40–>100	9–19
Skin bleeding-time in minutes. Technique (Copley and Lalich, 1942)	3	3	1·5–3
Plasma prothrombin. Technique (Quick, 1951), in seconds ..	10	10	10–12
Prothrombin assay. Technique, Fantl (1954a) in units per ml. oxalated plasma	530	420	440–600
Serum prothrombin:			
1 hour after clotting	10	9·5	14– ∞
2 hours ,, ,, ...	14	9·5	20– ∞
Technique, modified Quick in seconds			
Serum prothrombin:			
1 hour after clotting	31–43	—	0–12
2 hours ,, ,, ...	17–31		
Technique, Fantl in units per ml. serum as % of plasma prothrombin			
Thrombocytes indirect. Technique, Fonio per cubic mm. blood	450,000	450,000	>100,000
Clot retraction	Complete	Complete	Complete

The type and degree of the deficiency were determined in the blood of mother and son by the rate of thrombin formation. These results are given in Fig. 2.

Rate of Formation and Yield of Thrombin in Diluted Blood of Mother and Son

The laboratory data show a coagulation defect in Mrs. M's blood in degree consistent with the clinical findings. The whole-blood coagulation time is moderately prolonged; the residual serum prothrombin is well above the upper normal limit (Table I). The thrombin formation in Mrs. M's diluted blood is delayed although the yield is normal (Fig. 2, curve A). The addition to Mrs. M's blood of 10% normal Ba plasma, as a source of alpha-prothromboplastin, converts the rate of thrombin formation to normal (Fig. 2, curve B).

These findings are characteristic of a partial alpha-prothromboplastin deficiency. No evidence of abnormality of other clotting factors or the presence of clotting inhibitors or fibrinolysis was detectable.

There is no doubt that the son is suffering from the same type of deficiency as his mother, but, in contrast to her, his blood is completely devoid of alpha-prothromboplastin (Fig. 2, curve C), the abnormality being again corrected *in vitro* by 10% Ba plasma (curve D), but not significantly by stored plasma (beta-prothromboplastin) (curve E). In the child's case these results corroborate the evidence obtained from plasma clotting times of mixtures of the patient's plasma with that of authentic alpha- and beta-prothromboplastin-deficient patients respectively, as can be seen from Table II.

TABLE II.—*Recalcification Time of Oxalated Plasma Mixtures (0.2 ml. 0.01/M $CaCl_2$ was added at 37° C.)*

	Plasma in ml. of			Normal Serum (ml.)	Clotting Time (Seconds)
	Authentic Alpha-prothrombo-plastin Deficiency	Authentic Beta-prothrombo-plastin Deficiency	Normal Alumina Plasma		
Mother, 0·1 ..	—	—	—	—	130
Son, 0·1 ..	—	—	—	—	>400
,, — ..	0·1	—	—	—	400
,, — ..	—	0·1	—	—	300
,, 0·08 ..	0·02	—	—	—	480
,, 0·08 ..	—	0·02	—	—	130
,, 0·08 ..	—	—	0·02	—	180
,, 0·08 ..	—	—	—	0·02	300
Normal, 0·1 ..	—	—	—	—	130–200

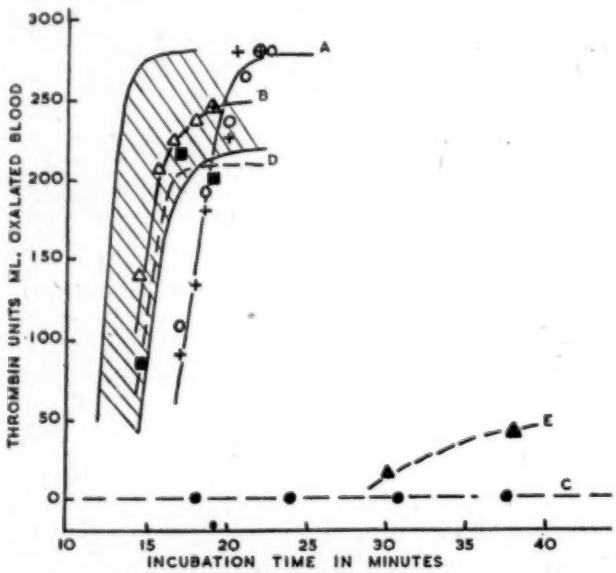

FIG. 2.—A 20% dilution of venous oxalated blood with 0.15/M sodium chloride was made immediately after collection. Mixture 1 consisted of 0.2 ml. 20% diluted blood added to 1.5 ml. of a solution containing 0.6 ml. 0.025/M $CaCl_2$, 0.6 ml. 0.15/M NaCl, 0.3 ml. 0.18/M pyrocatechol in veronal buffer *p*H 7.4. Temperature 28° C. Thrombin was measured according to the technique of Fantl (1954a). Curves, full line (A, B), were obtained from Mrs. M's blood. Curve A +——+, o——o indicate mixture 1 plus 0.1 ml. 0.15/M NaCl. Curve B △——△ indicates mixture 1 plus 10% Ba plasma. Dotted line curves C, D, and E were obtained from son's blood. Curve C ●— — —● indicates mixture 1 plus 0.1 ml. 0.15/M NaCl. Curve D ■— — —■ indicates mixture 1 plus 10% Ba plasma. Curve E ▲— — —▲ indicates mixture 1 plus 10% stored plasma. The shaded area presents the normal range.

Discussion

A critical review of the literature dealing with female bleeders, believed to be haemophiliacs, has been made by Merskey (1951) and by Israëls *et al.* (1951). Both groups of workers produce good evidence for the existence of congenital haemophilia in females, although the possibility that some of the cases may have suffered from beta-prothromboplastin deficiency must be considered. In both instances the homozygous state in the affected women has been established.

Additional reports of female haemophiliacs have been published (Koller *et al.*, 1950; Graham *et al.*, 1953; Quick and Hussey, 1953). With the exception of the latter, who described a sporadic case in a girl in whom the hereditary nature of the condition could not be established, the other females showed both clinically and on laboratory evidence the same degree of deficiency as their affected male relatives. Graham *et al.* (1953) have postulated the existence of a series of allelic genes which decide the plasma level of the anti-haemophilic factor in individual families. This is usually constant within an affected family, and breeds true according to the degree of the defect. Generally the inherited prothromboplastin-deficiency diseases show the recessive sex link type of inheritance, but there is some evidence that the trait may not be completely recessive in female members of a pedigree.

Most of the haemophilic carrier women have not given any laboratory evidence of a clotting defect (Merskey and Macfarlane, 1951).

There is little doubt that Mrs. M and her son suffer from a well-defined congenital defect. Unfortunately the genetic features remain puzzling and unsolved. They are unique in that the mother suffers from a relatively mild haemorrhagic disorder. She is a true haemophiliac, her plasma exhibits a partial alpha-prothromboplastin deficiency, whereas her son is a very severe haemophiliac, whose blood is completely devoid of alpha-prothromboplastin. So far as can be ascertained there is no likelihood of consanguineous marriages in Mrs. M's family. Her husband and his family are free of bleeding tendencies. If the doubtful story of bleeding in the maternal great-uncle is accepted as a manifestation of mild haemophilia, it does not explain the severity of the condition in the child. It appears most probable that Mrs. M is heterozygous in respect of the gene responsible for her son's condition, but in her own case the trait is incompletely recessive. Although other possibilities could be considered, no useful deductions could be made, and it is therefore best to refrain from further speculations concerning the genetic features of the presented cases.

Summary

A congenital haemorrhagic tendency of moderate severity in a mother was shown to be due to a partial alpha-prothromboplastin deficiency (haemophilia) in her blood. Her daughter has no bleeding tendency. The son is a very severe bleeder. His blood is completely devoid of alpha-prothromboplastin. Puzzling genetic features in the presented cases are pointed out.

It is desired to acknowledge the co-operation of Dr. J. M. Alexander, under whose care the patient was. The laboratory investigations were carried out in the pathology department of the Royal Alexandra Hospital for Children, Camperdown, Sydney (director, Dr. R. D. K. Reye). One of us (P. F.) as guest worker enjoyed the hospitality and generous co-operation of Dr. Reye and his staff.

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Prostitution is the subject of a pamphlet published by the British Social Biology Council (*Occasional Paper*, No. 8, price 1s. 6d.), with the object of providing the general reader with some reliable information on the subject. The author, Eleanor French, points out that the young prostitute and the "spiv" are figures of at least equal importance in their anti-social potentialities, and yet study of the former is neglected: "The 'Teddy Boy' is accepted as a respectable subject for interest, and receives far more help and study than does the prostitute." After presenting briefly what little is known about the prostitute and her clients—"the prostitutes who have been studied by research workers have in practically all cases been the failures"—the author discusses what could be done in the way of rehabilitation and prevention. There is also a note on the legal position.

NON-TUBERCULOUS AND TUBERCULOUS EPIDIDYMITIS

BY

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Non-tuberculous (non-specific) and tuberculous epididymitis have been separately well documented in the surgical literature (Morson, 1933; Robinson, 1943; *Army Medical Department Bulletin*, 1943; Handley, 1946; Borthwick, 1947). Direct comparisons of parallel series of the two conditions are, however, rare (Stevens, 1923; Campbell, 1928; Järvinen, 1944). In this paper, based on a study of 80 cases of non-tuberculous and 28 cases of tuberculous epididymitis seen at Hammersmith Hospital between the years 1938 and 1952, an attempt is made to compare and contrast the two conditions: the differential diagnosis still sometimes remains a difficult problem. The diagnosis of tuberculous epididymitis was based on histological findings in 9 cases and on the presence of tubercle bacilli in the urine in 12; in the remaining 7 cases the diagnosis was based on persistent epididymal swelling in the presence of renal tuberculosis (5 cases) or pulmonary tuberculosis (2 cases).

The average age of the patients in both groups was 42 years; the age ranges were virtually identical—15 to 69 in the non-tuberculous cases and 13 to 72 in the tuberculous. The right and left sides were equally involved in both conditions, but the incidence of bilateral involvement in the non-tuberculous cases (9%) was considerably lower than it was in the tuberculous cases (32%).

Symptoms

Scrotal Swelling and Pain.—Scrotal swelling and pain were the commonest symptoms in both groups, and their incidence is indicated in Table I. The duration of the swelling, deduced from the statements made by the patients, is shown in Table II. Previous attacks of epididymitis, with subsequent resolution, affecting either the same or the other side, occurred in 15% of the non-tuberculous cases.

Urinary Symptoms.—Increased urinary frequency, dysuria, and macroscopic haematuria occurred in both groups (Table III), and these symptoms at times preceded the development of the scrotal symptoms. One or more of these symptoms of increased frequency, dysuria, and haematuria occurred in 47 (59%) of the non-tuberculous and in 18 (64%) of the tuberculous cases. Urinary symptoms preceded the scrotal symptoms in 26 (32%) of the non-tuberculous and 12 (43%) of the tuberculous. In the 26 non-tuberculous cases in which the urinary symptoms preceded the scrotal symptoms there was generally a short interval between the onset of the urinary symptoms and the development of the scrotal symptoms—less than 7 days in 6 cases, from 7 to 14 days in 5 cases, and 15 to 90 days in 10 cases. In the tuberculous cases the interval was always longer than 90 days.

Sinus Formation.—This was rare in the non-tuberculous cases, occurring in only 5%. In the tuberculous cases, however, it was much more common, occurring in 35%.

Tuberculosis Elsewhere in the Body.—Of the 80 patients with non-tuberculous epididymitis none had known tuberculosis anywhere in the body either before or at the time of presentation: it must be pointed out, however, that persistent epididymal swelling in the presence of tuberculous disease elsewhere has been accepted by us as tuberculous epididymitis. Nevertheless, allowing for the possible error in such a presumption, there was a striking difference in the cases of tuberculous epididymitis, and if only those patients in whom the diagnosis was made by histology or by the occurrence of tubercle bacilli in the urine are considered (21 cases), 76% were known to have had tuberculosis elsewhere: 11 patients had pulmonary tuberculosis, 2 renal tuberculosis, 1 spinal tuberculosis, 1 "tuberculous rib periostitis," and 1 tuberculous cervical lymphadenitis.

TABLE I.—*Incidence of Scrotal Swelling and Pain*

	Non-tuberculous Epididymitis	Tuberculous Epididymitis
Swelling and pain	43	7
„ alone	16	10
No recorded complaint of swelling or pain (patients presented with urinary symptoms)	21	11
Total	80	28

TABLE II.—*Duration of Scrotal Swelling*

	Non-tuberculous Epididymitis	Tuberculous Epididymitis
Less than 21 days	64	7
More „ 21 „	14	9
Incidental finding	1	5
No record	1	7
Total	80	28

TABLE III.—*Incidence of Urinary Symptoms*

	Non-tuberculous Epididymitis	Tuberculous Epididymitis
Increased frequency of micturition	34	9
Dysuria	27	6
Macroscopic haematuria	24	3

TABLE IV.—*Incidence of Prostatic and Vesicular Nodularity*

	Non-tuberculous Epididymitis	Tuberculous Epididymitis
Nodularity present	21	14
„ absent	38	6
No record	21	8
Total	80	28

Prostatic and Vesicular Involvement.—Prostatic and/or vesicular involvement, judged by the presence of nodularity on rectal examination, occurred in the cases of non-tuberculous and tuberculous epididymitis (Table IV).

Urinalysis

Records of urinalysis were available in 68 cases of non-tuberculous and 21 cases of tuberculous epididymitis. The results are shown in Table V.

TABLE V.—*Urinalysis*

	Non-tuberculous Epididymitis	Tuberculous Epididymitis
Coliform pyuria	35	5
"Mixed" (non-tuberculous) infection	10	0
Sterile pyuria	7	11
Sterile	16	3
No record	12	9
Total	80	28

The incidence of tubercle bacilli in the urine in the cases of tuberculous epididymitis was as follows:

Tubercle bacilli found on direct examination	8
„ „ „ „ guinea-pig inoculation	4
„ „ not found	10
No record	6
Total	28

The high incidence (at least 66%) of urinary infection in the cases of non-tuberculous epididymitis is to be noted, while the relatively high incidence (at least 26%) of secondary urinary infection in the cases of tuberculous epididymitis is of interest. Of interest, too, are the observations that 5 of the patients with non-tuberculous epididymitis and urinary infection did not admit to any urinary symptoms and 19 of those with coliform pyuria had haematuria.

Treatment

No records of treatment are available in seven cases of non-tuberculous epididymitis: conservative treatment was generally employed, but surgical measures were required in 20% of the cases. Orchidectomy was carried out in 6 cases, incision and drainage of an abscess in 5, epididymectomy in 2, and vasectomy in 2.

The majority of the tuberculous cases were treated before the introduction of streptomycin and adjuvant drugs, and surgical treatment was commonly employed. Orchidectomy was carried out in 9 cases, epididymectomy in 5, and drainage of an abscess in 1.

After-history

Postal inquiry was made in 71 (89%) of the non-tuberculous and 14 (50%) of the tuberculous cases, and replies were received on behalf of 37 non-tuberculous and 7 tuberculous cases; 4 other non-tuberculous and 13 other tuberculous cases were seen personally.

There was a striking difference in the after-histories of the two conditions. Only four of the non-tuberculous cases had further symptoms: one reported haematuria, one dysuria, one scrotal swelling on the opposite side, and one thought there was some residual scrotal swelling. In contrast, 36% of the cases of tuberculous epididymitis were known to have died.

Discussion

It would be unwise to compute the relative incidence of the two conditions from the present series of cases. It is almost certain that more cases of non-tuberculous epididymitis were seen and treated only as out-patients, and the records of such patients are not readily available to us: nevertheless, it would appear that there is at least a 3 to 1 preponderance of non-tuberculous over tuberculous cases among patients attending the out-patient department of a general hospital.

The average age incidence (42 years) in our own series of non-tuberculous cases is higher than that reported by Campbell (1928), McGavin (1943), Robinson (1943), and Handley (1946): the last two authors, however, based their observations on Service personnel, who, not unnaturally, were made up of younger age groups.

Bilateral epididymal involvement occurred in 32% of our tuberculous cases, and this high incidence confirms the reports of Stevens (1923) and Robinson (1943). Our observations do not support the statement (McGavin, 1943) that non-tuberculous epididymitis is often bilateral and simultaneous.

Although a short history of scrotal swelling favours a diagnosis of non-tuberculous disease, an acute onset can occur in tuberculosis: three of our patients with tuberculous epididymitis had histories of less than seven days. Conversely, patients with non-tuberculous epididymitis may have a scrotal swelling which has been present for as long as three years (Stevens, 1923). While it is common for a patient with non-tuberculous epididymitis to complain of a painful scrotal swelling, it is to be noted that 25% of our tuberculous cases presented in a similar way. Recurrent epididymal swelling is said to occur in 30% of non-tuberculous cases (Campbell, 1928): the incidence in the present series was 15%. Tuberculous epididymitis is persistent.

Urinary symptoms are commonly present in both non-tuberculous and tuberculous cases, but a long history of urinary symptoms preceding the onset of scrotal swelling favours the diagnosis of tuberculosis. Macroscopic haematuria, no doubt the result of an associated *Bact. coli* cystitis, may be commoner in the non-tuberculous cases than is usually recognized: it occurred in only two of Robinson's cases (1943) and one of Handley's (1946), but in 30% of the present series. Haematuria occurred in only 10% of our cases of tuberculous epididymitis: this incidence is lower than that reported by others (Ross, 1953), but in four of our cases a previous nephrectomy had been carried out and it is possible that haematuria had preceded this operation.

Sterile pyuria, in the presence of an epididymitis, is suggestive of tuberculosis; nevertheless it occurred in 10% of the non-tuberculous cases in the present series. Conversely, although coliform and/or coccal pyuria, in the presence of an epididymitis, is suggestive of non-tuberculous disease, secondary infection of the urine was found in 26% of our cases of tuberculous epididymitis. The presence of tubercle bacilli in the urine of patients with epididymitis is practically conclusive, but it must be admitted that exceptions to this general rule could occur.

A scrotal sinus usually reflects the degree of chronicity of underlying epididymal disease; it was rare in the non-tuberculous cases, but occurred in 35% of the tuberculous cases, an incidence which is virtually the same as that reported by Stevens (1923).

Prostatic and vesicular involvement is a common finding in cases of tuberculous epididymitis: Borthwick (1947) recorded an incidence of 89%, and the incidence was 70% in the present series. Nevertheless, prostatic and vesicular nodularity occurred in 36% of our cases of non-tuberculous epididymitis. Stevens (1923) has stated that the presence of prostatic and vesicular involvement is not as significant as progression of the lesion while the patient is under observation: if a prostatic or vesicular nodule has been present for less than one month there is an equal chance that it is either tuberculous or non-tuberculous, but if it persists for several months it is likely to be tuberculous.

Judged by the benign after-history of our cases of non-tuberculous epididymitis treated expectantly, there seems to be little indication for carrying out epididymectomy in all cases of non-tuberculous disease as recommended by Järvinen (1944); there is, no doubt, a place for epididymectomy as the definitive treatment for the tuberculous patients, even with streptomycin and adjuvant therapy, but it is irrational to carry out an early excision of a non-tuberculous epididymis simply because its function has been destroyed and because it may prove to be tuberculous on histological examination. There is little doubt that the differential diagnosis between the two conditions is sometimes difficult when the patient is first seen, but it is our opinion that the diagnosis eventually declares itself either as a result of full urological investigation or after the lapse of time.

Summary

Parallel series of 80 cases of non-tuberculous epididymitis and 28 cases of tuberculous epididymitis seen at a civilian general hospital during a fifteen-year period have been compared and contrasted.

The average age of the patients in both series was 42 years and the age ranges were virtually identical.

The right side was involved as frequently as the left in both series: bilateral involvement was relatively less common in the non-tuberculous cases.

A short history of scrotal swelling occurred in 80% of the non-tuberculous cases and in 33% of the tuberculous. Pain occurred in both the non-tuberculous and the tuberculous cases: it was more common in the former. Recurrent swelling occurred in 15% of the cases of non-tuberculous epididymitis; the swelling persisted in the tuberculous cases.

Urinary symptoms were commonly present in both the non-tuberculous and the tuberculous cases, but a long

precedent history of urinary symptoms favoured the diagnosis of tuberculous epididymal disease. Macroscopic haematuria occurred in 30% of the cases of non-tuberculous epididymitis and was probably due to cystitis. Sterile pyuria was noted in 10% of the cases of non-tuberculous epididymitis: it was considerably more common in the tuberculous cases. Coliform and/or coccal infection of the urine was commonly present in the non-tuberculous cases but occurred also in 26% of the tuberculous. Tubercle bacilli were isolated from the urine in 12 of 22 cases so examined.

A scrotal sinus was rare in the cases of non-tuberculous epididymitis but developed in 35% of the tuberculous cases. Prostatic and vesicular nodularity was noted in 36% of the non-tuberculous cases and in 70% of the cases of tuberculous epididymitis. Clinical tuberculosis elsewhere in the body, either concurrent or precedent, was found in 76% of the tuberculous cases. The majority of the cases of non-tuberculous epididymitis were treated expectantly and ran a benign course. The tuberculous cases were treated by surgical excision—before streptomycin and the adjuvant drugs were available. 36% of the patients were dead within a few years.

The differential diagnosis between the two conditions is sometimes difficult and is apparent only after the lapse of time: full urological investigation is advisable.

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A PURPURIC DRUG ERUPTION CAUSED BY CARBROMAL

BY

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Carbromal (α-bromo-α-ethylbutyrylcarbamide) is a hypnotic, belonging to the class of open-chain ureides and closely related chemically to chloral, bromvaletone, and "sedormid." It was introduced in 1910 and popularized by Bayer Products Ltd. under the name of "adalin." The first report that the substance caused a drug eruption did not appear until 1921 (Loeb, 1921), and the purpuric nature of the eruption was well emphasized in the same paper. Since then, further cases have been described by Continental authors. The nearest approach to a description of the condition in the English language, however, is in a paper by Sneddon (1952), where it is cited as a differential diagnosis to purpuric textile eruptions. Usually it is merely alluded to by including carbromal in a list of drugs capable of causing purpura—for example, Brain (1950); while it has even been stated that carbromal does not cause purpura at all (Ackroyd, 1949; Beckman, 1952). However, it is generally agreed that carbromal has no effect on the blood platelets, as has sedormid, which is a well-recognized cause of thrombocytopenic purpura.

Carbromal is becoming increasingly popular in this country as a nocturnal sedative. It can be purchased by the general public without a doctor's prescription, and seems to be the first choice of the chemist when asked for "something to make me sleep." Besides being sold as 5-gr. (320-mg.) tablets, carbromal is sold under a variety of trade names, such as "persomnia," containing, *inter alia*, 3 gr. (200 mg.) of carbromal, "dormiprin," containing 2 gr. (130 mg.), and "somnotil," containing 1 gr. (65 mg.). Finally, it is also being fairly widely advertised to the public.

In view of these facts, it was thought that a full description of the drug eruption caused by carbromal might be of value, and this paper deals with six such cases seen in the skin department of St. Bartholomew's Hospital in the first half of 1954.

Case Reports

Case 1.—A spinster aged 40 complained of a very irritating rash that had been present for four weeks. It had begun on the thighs and was still spreading. On examination well-defined patches, irregular in shape and size, were found on the thighs, buttocks, and lower trunk, consisting of petechiae and linear purpuric streaks, erythema, pigmentation, and branny scaling. Over the hips the eruption had become confluent and thickened. Increased capillary fragility was present. Five weeks previously she had begun taking persomnia, two tablets nightly. A patch test with 1% carbromal in propylene glycol was negative, but the eruption cleared in two weeks after stopping the drug. Slightly increased capillary fragility was still present a fortnight later.

Case 2.—A man aged 53 complained of a very irritating rash, present for six weeks, which had begun around the ankles, the inside of the knees, and over the hips, and which had spread steadily ever since. On examination the whole skin, with the exception of the soles, hands, and face, was affected by an eruption consisting of petechiae and linear purpuric streaks, erythema, pigmentation, and branny scaling. On the trunk, thighs, and upper arms these elements were aggregated into well-defined, irregularly shaped patches of varying size. On the forearms and lower legs the eruption was mainly petechial, in some areas diffuse and in the others confluent. Over the inner aspect of the knee-joints, the hips, and shoulders the eruption formed a slightly thickened sheet. Marked increased capillary fragility was present. He had been taking persomnia, one or two tablets nightly, for nine weeks. A patch test to 1% carbromal in propylene glycol was negative, but the eruption cleared completely in four weeks on stopping the drug.

Case 3.—A married woman aged 52 complained of an irritating eruption, present for three months, which began round the right ankle in the region of her varicose veins. On examination an eruption was seen on the legs, trunk, and upper arms, consisting of petechiae and purpuric streaks, erythema, pigmentation, and branny desquamation. On the thighs, trunk, and upper arms the eruption was patchy; over the shoulders, hips, and knees it was confluent and thickened; and on the lower legs it was profuse and mainly petechial. Slight increased capillary fragility was present. She had begun taking persomnia, two or three tablets nightly, six months previously. On stopping this drug the eruption cleared completely in two weeks.

Case 4.—A single woman aged 27 complained of an irritating eruption, which had been present for three months. On examination a grossly excoriated eczematous reaction was seen affecting the legs, thighs, and upper arms. The eruption had coincided with extreme domestic difficulties and cleared completely in four weeks as a result of bland local applications, mild sedation, and sick-leave. She was referred again, one week after returning to work, with a relapse of the eczema. This time, however, the eruption was mainly petechial, together with some erythema, pigmentation, and branny scaling, patchy on the thighs, trunk, and upper arms, and diffusely purpuric on the lower legs and forearm. It had begun on the feet, had spread suddenly in a few days,

and was extremely irritating. Increased capillary fragility was present, and persisted for a month after the eruption had cleared. She had started to take carbromal three or four tablets nightly, three months previously—that is to say, two months after the onset of the original eczematous rash. Patch tests to a saturated solution of carbromal in propylene glycol were negative, but the eruption cleared a month after stopping the drug.

Case 5.—A married woman aged 50 complained of a non-irritant rash, present for four months, which had begun on the thighs and which had steadily spread. On examination well-defined, irregularly shaped patches of varying size, consisting of petechiae, erythema, pigmentation, and branny scaling, were seen on the limbs and trunk. Some petechiae were seen between the patches and they were particularly marked and profuse on the lower part of the legs. Increased capillary fragility was present. She had been taking carbromal, one tablet nightly, for a year. The eruption cleared two weeks after stopping this drug, at which time the capillary fragility had also disappeared.

Case 6.—A man aged 42 complained of an eruption which had been present for three months and which had been irritating for one month. It had appeared first on the feet and had spread steadily to affect the limbs and trunk. On examination the eruption was found to consist of petechiae, purpuric streaks, erythema, pigmentation, and branny scaling, diffuse and mainly purpuric on the forearms and lower legs, but aggregated into irregular patches on the trunk and upper limbs. A similar eruption had appeared one year ago on the feet and had spread suddenly to the limbs and trunk within a week. It had been irritable for the first week only and had persisted for three months. Three weeks before the eruption he had begun taking carbromal, two tablets nightly, but reduced the dose to one tablet a night about three months later—that is, a few weeks before the eruption cleared. He increased the dose to two tablets a night just before the eruption appeared for the second time. The carbromal was stopped when he was first seen and the eruption cleared in three weeks, at which time increased capillary fragility, which had been present at first, could no longer be demonstrated. A patch test to a saturated solution of carbromal in propylene glycol was negative.

The eruption in a typical case.

Discussion

The eruption was remarkably constant in all six cases and warrants no further description. Severe irritation was complained of by five of the patients, but was completely absent in the sixth. The dose of carbromal varied between 3 and 20 g. (0.2 and 1.3 g.) nightly, but in all cases was within the therapeutic range (Martindale, 1952) and bore no relationship to the severity of the eruption. Increased capillary fragility was constantly present, and in two of the cases persisted for some weeks after the eruption had cleared, but in no case was any haematological abnormality found. Patch tests were uniformly negative. Only one of the patients obtained the drug on a doctor's prescription.

Unless the purpuric element in the eruption is recognized the condition may be mistaken for pityriasis rosea, seborrhoeic dermatitis, or eczema. Two other eruptions, morphologically identical with that produced by carbromal and in which irritation is usually present, must be considered in the differential diagnosis. The first of these is the purpuric textile dermatitis, first described by Hodgson and Hellier (1946), occurring among British troops in north-west Europe. Subsequent cases have been reported among civilians (Peterkin, 1948; Sneddon, 1952). Invariably the cause has been a new article of clothing, but many garments have been incriminated, such as a vest, shirt, bathing-dress, pair of riding-breeches, and a suit. The causative factor, which is not a dye, appears to be some chemical used in processing the clothing, which can, while the clothing is still new, cause capillary damage in certain individuals. In the second condition the eruption appears for no discernible reason, persists for anything from two months to a year, and resolves spontaneously. Treatment has no effect. Sneddon (1954) has suggested that these three varieties of purpuric dermatosis, due to external contact causes, to ingested allergens, and of purely endogenous origin, may be a change comparable to the eczema reaction. To regard the eruption as a particular variety of skin change which may have a number of causes appears to be the most rational approach.

The final diagnosis of a carbromal drug eruption must rest on the effect of stopping the drug. Patch tests are misleading, since a positive result is difficult to obtain, and a test dose is out of the question in an eruption which may persist for up to a month after the responsible drug has been withdrawn. Nevertheless, improvement in the intensity of both the eruption and the irritation is obvious within a few days to a week of stopping the drug, and the condition clears completely in, at the most, a month.

Summary

Six cases of purpuric eruption caused by the ingestion of carbromal in therapeutic doses are described, and the differential diagnosis is discussed.

It is emphasized that the use of this drug as a nocturnal sedative is increasing in this country, and that it may be purchased without a doctor's prescription.

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According to the U.S. Army Surgeon General, radiographs of wounded soldiers on the battlefield with a newly designed portable *x*-ray unit powered by radioactive thulium will soon be possible. The new device can produce an *x*-ray picture without electricity, water, or darkroom. The complete unit weighs only 48 lb. (21.8 kg.) and may be carried on the back. A ¼-in. (6-mm.) lead plate contains the radioactive thulium and protects the user from accidental radiation exposure. The piece of thulium is expected to be effective for about one year, when it will be returned to an atomic pile for rejuvenation. The developer is a cassette or filmholder in which all pictures are made with radiosensitive paper and pads instead of film. The paper and pad are saturated with developer and stabilizer and are separated by leak-proof dividers. The cassette is wrapped with a light-proof and waterproof covering. As the cassette is exposed, the dividers are removed and the radiosensitive paper records the picture. These radiographs lack the fine detail of standard *x*-ray films, but are suitable for field and emergency use. A person can be trained to use the machine in a few hours, and can set it up, take a picture, and develop it within five to ten minutes. Timing of the exposure is done with a wrist watch. Each unit will cost about $200, but additional tests must be made before it can be standardized for commercial manufacture.

Medical Memoranda

Paradoxical Haematemesis in Oesophageal Atresia

An essential prerequisite for the diagnosis of oesophageal atresia is to have the condition in mind. From the variations in its reported incidence it seems probable that in some areas the diagnosis is less frequently considered than in others. However, it may happen that because of the coexistence of an additional condition the diagnosis may be delayed or even missed altogether. As the subsequent case report shows, the occurrence of haematemesis in a case of oesophageal atresia might well obscure the diagnosis, and so lead to undesirable delay in operative treatment.

CASE REPORT

A primipara aged 35 was delivered of an apparently normal male child in her own home on the evening of October 9, 1953. The birth weight was 8¼ lb. (3.7 kg.). The baby was not put to the breast. Next morning the midwife noticed that the baby's colour was poor, that the respirations sounded moist, and that there was some white frothy mucus in the mouth. The patient's own doctor was called; he examined the chest and found no abnormality. The foot of the cot was raised to drain the chest. No feeds were given that day. On the second day the baby was put to the breast, and he sucked well. The colour was good and meconium was passed. Later he brought up some thick mucus from the nose and mouth. In the evening he would not suck the breast.

Early the following morning (third day) the baby brought up some red blood. His colour was poor and he appeared to be shocked. The doctor was called again, and he immediately sent the patient to the Bradford Children's Hospital. Here a diagnosis of haemorrhagic disease of the newborn was made and 10 mg. of vitamin K was given intramuscularly. Feeds of glucose water were returned together with some bright-red blood and, on one occasion, clots. Later he passed a melaena stool. On the fourth day there was no change and no feeds were retained; it was at this time that the diagnosis was made. An attempt was made to pass a catheter into the stomach, but without success. A little lipiodol was therefore instilled into the catheter in the back of the throat and a radiograph taken. This showed the typical upper blind pouch of oesophageal atresia together with gas in the stomach, indicating the presence of an oesophago-tracheal fistula.

Soon after this the child was transferred to the Bradford Royal Infirmary, where an operation was performed a few hours later. Through an intrapleural approach the fistula between the lower stump of the oesophagus and trachea was divided, and continuity of the oesophagus was effected by an end-to-end anastomosis, using interrupted catgut sutures. For the next seven days no feeds were given, and fluid requirements were supplied by the subcutaneous route. On the eighth day a glucose–water feed was taken well. On the ninth day, however, he vomited after feeding. A lipiodol swallow was given; the radiograph showed lipiodol to be present in the stomach and was not suggestive of a leakage from the anastomosis. The child, however, did not look well, and as a precautionary measure a gastrostomy was performed under local analgesia. The gastrostomy feeds, however, made him vomit just as much as feeds by mouth, so after twenty-four hours feeding by mouth was restarted, and this time no further vomiting occurred. He made a gradual but uninterrupted recovery.

COMMENT

The occurrence of haematemesis in the presence of oesophageal atresia is, of course, rare, but the route from the stomach up the lower segment of the oesophagus through the oesophago-tracheal fistula, up the trachea, and into the mouth has been known for a long time as an explanation for the occurrence of acid saliva in these cases. The term "paradoxical haematemesis" would seem to be a reasonable one, and serves as a reminder that vomiting can occur in oesophageal atresia with a fistula from the lower segment if there is anything in the stomach to vomit.

The delay in diagnosis in the case described was about twenty-four hours, and, as subsequent events show, was of no importance; but it takes little imagination to realize that the symptom of haematemesis might appear to exclude the diagnosis of atresia of the oesophagus in the mind of a person unfamiliar with the anatomy of the condition.

My thanks are due to Mr. J. S. Davidson, who performed the operation, for permission to publish this case, and to Dr. Elizabeth Rosenblum, of the Bradford Children's Hospital, who made the diagnosis.

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A Case of Malignant Melanoma and Pregnancy

The association of malignant melanoma and pregnancy is not commonly reported. Cases have been described of malignant melanoma giving rise to secondary deposits in the placenta or foetus, but no reference is found to the effect of pregnancy on the growth of a melanoma. The following case illustrates this relationship.

CASE HISTORY

A woman aged 39 was first seen in July, 1949. She was expecting her first child, and was eight weeks pregnant. In August she noticed that a deeply pigmented mole on her left calf was enlarging and weeping a little. There were no signs of any secondaries and she was referred to hospital for surgical opinion. A biopsy of the tumour was performed and the histological report was of a "non-malignant cellular naevus." In February, 1950, the baby was delivered, but it died six weeks later of bronchopneumonia. In May the tumour was excised and a histological report confirmed that it was a "simple non-malignant cellular naevus."

In June she was once again eight weeks pregnant. The antenatal period and delivery in January, 1951, was normal, but three weeks later she noticed a rapidly enlarging lump developing in the left groin. This was clinically a mass of glands and she was referred for further surgical opinion. A biopsy of a gland was taken and fresh sections were cut off the original naevus. The histological report stated that "the naevus is almost certainly malignant and the glands in the groin are secondaries." The glands were excised in May, 1951, and a course of *x*-ray therapy to the groin was given.

All was well for the next two years, and mother and baby flourished. In September, 1953, she was once again 20 weeks pregnant. The antenatal period and delivery in January, 1954, were again quite normal, but after delivery a large tender mass was felt in the left iliac fossa displacing the involuting uterus to the right. She was referred to hospital and the diagnosis of further metastases made. A further course of *x*-ray therapy was given and the mass of glands disappeared. The patient is at the time of writing quite well, showing no other secondaries. Unfortunately the baby is a mongol.

COMMENT

The case appears to show that pregnancy has stimulated the growth of a melanoma. It is difficult to think such an appearance could be mere coincidence, since it happened on three different occasions. Presumably the stimulus is hormonal in character, and the query arises whether pregnancy should be terminated in such cases. Since this is but a solitary case the query must remain unanswered.

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Hypoglycaemia in Chronic Alcoholism

The following case is unusual and presented certain difficulties in diagnosis.

CASE REPORT

The patient, a man aged 54, was known to be a chronic alcoholic. The doctor was sent for one morning because of difficulty in rousing him. Initially it appeared that he had been mentally very confused; about an hour later he was found by his daughter to be completely unconscious. He had spent the previous day normally and retired to bed about 9.30 p.m., apparently sober. There was no admission of any immediate alcoholic excess.

When he was examined there was a strong smell of ketones in the small airless room. He was deeply comatose, lying flat on his back, with open eyes and giving an occasional twist of his head. The skin was distinctly moist, but unfortunately the significance of this was not realized until later. The pupils reacted to light; all tendon reflexes were present and equal; abdominal reflexes were present, and no plantar responses were obtained. A catheter specimen of urine showed Rothera's test quickly and strongly positive, and Gerhardt's and Benedict's tests negative. Other systems were all normal. By this time he had been in coma for about three hours.

Treatment was based on a provisional diagnosis of diabetic—that is, hyperglycaemic—coma without glycosuria. In view of some uncertainty, however, it was decided to administer dextrose intravenously before giving the insulin. At the conclusion of an injection of 25 ml. of 25% dextrose the patient at once regained immediate consciousness, in the dramatic manner associated only with recovery from hypoglycaemia.

The differential diagnoses considered at this stage were (1) ketosis and hypoglycaemia due to liver insufficiency, and possibly aggravated by inadequate food intake; (2) spontaneous hypoglycaemia; (3) diabetes mellitus.

He was admitted for investigation. One hour later his blood urea was 31 mg. per 100 ml., and blood sugar 253 mg. per 100 ml. (in view of recent glucose administration, this was not of much value). Twenty-four hours later his fasting blood sugar was 94 mg. per 100 ml. The latter was taken to exclude diabetes mellitus, of which there really was no positive evidence. The urine was tested on frequent occasions during the next few days, and no glycosuria was found. The ketosis resolved after about 36 hours without specific treatment, although he was encouraged to eat.

Liver-function tests at this stage showed: Serum alkaline phosphatase, 3 units; serum thymol turbidity, 4 units; icterus index, 3 units; serum proteins, 9.8 g.% (albumin 5.8 g., globulin 4 g.); A/G ratio, 1.45:1.

The glucose-tolerance test gave the following results:

		Urine Sugar	Urine Acetone
Fasting blood sugar	91 mg./100 ml.	—	—
½ hour after 50 g. glucose ..	101 "	—	—
1 " " " " ..	121 "	Ft. trace	—
1½ hours " " " ..	171 "	++	—
2 " " " " ..	100 "	+	—
2½ " " " " ..	88 "	—	—

The change in the serum proteins suggests some degree of liver damage. The delay in storage of glucose supports this. The glucose-tolerance test also suggests a lowered renal threshold.

Three days after admission he had a classical episode of delirium tremens, which was treated in the usual way, and from which he recovered quite normally.

Five months later a similar incident of hypoglycaemia occurred in which he became mentally confused and disorientated. He did not go into coma and the blood sugar was 62 mg. per 100 ml. Frank ketosis was again present. Treatment and subsequent progress were as recorded in the first instance.

DISCUSSION

The recognition of hypoglycaemia dates from 1849, when Claude Bernard found that the mobilization of liver glycogen was the source of blood sugar. Between this discovery and the isolation of insulin, which does not concern us here, attention was mainly directed to the liver. Hepatic poisons were used experimentally—for example, phosphorus (Frank and Isaac, 1911)—to induce the condition.

Le Count and Singer (1926) have pointed out that alcoholics with huge fatty livers may die suddenly and unexpectedly. The large globules of fat take up most of the room in the liver cell, leaving no space for glycogen. The probable cause of death is hypoglycaemia. In this patient a similar condition probably was present, although there was no clinical evidence of hepatic enlargement.

Failure of endogenous sugar may also occur from wasting muscles and failure to replenish the stores, as in starvation. There was no evidence of either of these conditions in this case.

Ketosis has been established as due to carbohydrate lack, but many conflicting views have been put forward regarding how exactly this is brought about. One of the most recent theories is that propounded by Macallum (1930) by which ketone bodies are regarded as normal products of metabolism having an energy value of which most tissues, except the liver, could make use. In 1926 Raper and Smith suggested that the factor responsible for mobilizing fat in excessive amounts was a reduction of the liver glycogen below a certain level. MacKay (1943) has summarized the position as follows. The body is supplied with two types of fuel: "slow fuel" which represents the fat used directly by the tissues without any liver intervention, and "quick fuel"—namely, glucose and ketone bodies. He suggested that the production of ketone bodies, in times of need, was a device to conserve glucose for the central nervous system, which is unable to metabolize them. Mirsky (1942) asked, If ketone bodies are normal oxidation products why does excess ever occur? He answered this by saying that there was a maximal rate at which muscles could use ketone bodies, just as there was a maximal rate at which they could use glucose.

It is therefore postulated that hypoglycaemia and ketosis could both be explained by diffuse hepatic lesions. What evidence is there for this in the present case? The patient is a known addict to an established hepatic poison. The liver-function tests and the glucose-tolerance test show changes consistent with this argument.

This hypothesis seems to account for most of the features. However, it does not explain why such an episode should suddenly occur in a long-standing condition which showed no other immediate change for the worse. Further, if the liver involvement was severe enough to produce this picture, it might reasonably be anticipated that the liver-function tests would be more upset; but these are well known to be not unduly reliable. Also, it might be thought that the combination of hypoglycaemia and ketosis would be more common in other more obviously gross diseases of the liver than it is.

It is concluded that this is a case of fatty change in the liver due to alcohol poisoning, producing the clinical picture of hypoglycaemia and ketosis—a series of events which may be summarized thus: "Alcoholic hepatitis"→Depletion of hepatic glycogen→hypoglycaemia→production of ketone bodies by the liver.

My thanks are due to Dr. Serge Keys, who carried out the laboratory investigations.

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Reviews

CLINICAL PSYCHIATRY

Clinical Psychiatry. By W. Mayer-Gross, M.D., F.R.C.P., Eliot Slater, M.A., M.D., F.R.C.P., D.P.M., and Martin Roth, M.D., M.R.C.P. (Pp. 652+xx; illustrated. 50s.) London: Cassell and Co., Ltd. 1954.

The need for an entirely new systematic textbook of psychiatry in the English language has been realized for some time. None of those that have appeared in the last ten years have been fully satisfying from the point of view of the postgraduate who wishes to specialize in the subject. They have been either too short or insufficiently comprehensive, have been written from the point of view of one system of psychopathology, have been uncritical, or have lacked cohesion through multiple authorship. For the descriptive textbook based on long clinical experience and a discriminating knowledge of the literature it has been necessary to refer to the larger German works. Now that it has been accomplished, it seems very natural that a compromise in form should have been sought between the factual repleteness of the German *Lehrbuch* and the more readable British medical text. For the first time there is now available a textbook that contains about as much theoretical information as a trainee psychiatrist needs, together with clear indications of how to supplement this from specialized and original sources. Furthermore, the field covered is a large one—that of clinical psychiatry as applied at all ages in hospital and clinic, but restricted to those aspects which are not functional disorders of mind alone. The emphasis on constitutional factors is in fact such that the psychoneuroses and psychosomatic disorders themselves receive relatively little attention except in so far as they are an expression of maladjustment due to constitutional vulnerability.

This book is based on the experience of three psychiatrists of wide clinical knowledge who have inherited much of the unwritten teaching passed from one generation to the next both at Heidelberg and at the Maudsley Hospital in London, where all three have worked. In the tradition of Mott and Mapother they have taken an active part in extending the scientific and medical approach to problems of mental illness which has been a feature of British psychiatry in the last quarter of a century. The book abounds with evidences of a rich clinical experience. Some of the asides show a unique clinical wisdom, and in reading them one is grateful that much of the personal teaching of the authors and of the Maudsley school has now found its way safely into print.

It is doubtful if any attempt to achieve a full synthesis of the two contemporary approaches to problems of mental health, psychodynamic and constitutional, could be achieved in the present state of knowledge without a good deal of fence-sitting, and the authors have made it abundantly clear that, whatever faults may be found in their presentation, this will not be one of them. The result is a somewhat downright introduction in which collectively the three authors achieve a degree of aggressiveness which exceeds that found in the individual work of each, and within a few pages they earn for themselves an honoured place on the *index expurgatorius* of the psychoanalytic faith. While by quoting the work of some of its less-balanced adherents they are able to present the excesses of the psychodynamic outlook in all their absurdity, the authors are more than reluctant to admit that any good has come out of this movement at all. It is surprising, too, that in accepting a multidimensional approach they show relatively little sympathy for the reaction of Myerian psychobiology, with its melioristic attitude of considering important any factor which can help the patient, to the descriptive and deterministic heritage of Kraepelin. If, however, this results in a rather spectatorial attitude to mental misfortune, they are spectators who do not miss much of the game. Further, their cohesion is such that the book, which contains many descriptions of high literary merit, might well have come from a single pen.

The chapter on schizophrenia does a great deal to clear away the air of mystery with which this group of disorders is often approached, and to make the process of diagnosis and the choice of treatment less one of intuition and fancy than it often is at present. In particular the authors' authoritative and balanced views on the place of leucotomy operations will be welcome. The sections on mental deficiency and child psychiatry together satisfy the urgent need at the moment of presenting the notable advances made in these subjects, especially in the fields of genetics and organic determinants, and as a guide to the literature of an aspect of child life that is apt to get forgotten in the much more voluminous writings based on the work of child-guidance clinics.

A fully satisfactory eclectic postgraduate textbook of psychopathology and psychotherapy, written from the point of view of therapy within the social and economic framework and incorporating the results of the experiments of the last 20 years, has still to be written, and, until it is, the psychiatric trainee will have to muddle through, as he does at present. His load has, however, been immensely lightened in the field of general psychiatry by the publication of this book. Much forethought has been shown in its design and in its selective bibliography, and the co-operation between authors and publishers has been notably successful.

ALEXANDER KENNEDY.

FLUID THERAPY

Fluid Therapy. By James D. Hardy, M.S.(Chem.), M.D., F.A.C.S. (Pp. 255; illustrated. 42s.) London: Henry Kimpton. 1954.

In its comparatively limited compass of some 250 pages this book very largely fulfils its professed aim of providing "a concise discussion of total fluid therapy." It is written by a surgeon with experience of electrolyte problems in the laboratory as well as in the wards. The opening chapter, on the physiology of body fluid, is well arranged and well illustrated; only two of its 22 diagrams are taken from the Gamble mine of electrolyte illustrations, so that in this respect it has a refreshing "new look." There is a sketchy chapter on methods, in which more than half the space is taken up by photographs of technicians operating machines. In the next seven chapters the recognized syndromes of electrolyte distortion are summarized, and a number of appropriate case reports give reality to the discussion. The last 100 pages are devoted to the clinical situations in which electrolyte problems are likely to arise, and this section includes short chapters on fluid therapy in the elderly patient, and in urology, neurosurgery, and orthopaedics.

The book is well produced, and a detailed table of contents and index make its information accessible. The references at the end of each chapter are representative of the literature without being so numerous as to discourage looking them up. The clinical emphasis is largely, but not entirely, on surgical problems, and the book seems to me fitted to arouse, maintain, or increase a surgeon's interest in rational fluid therapy.

D. A. K. BLACK.

SURGERY OF THE CAECUM AND COLON

Surgery of the Caecum and Colon. By Stanley Aylett, M.B.E., M.B., B.S., B.Sc., F.R.C.S. (Pp. 295; illustrated. 45s.) Edinburgh and London: E. and S. Livingstone Ltd. 1954.

This is a new and beautifully illustrated work dealing essentially with the surgical lesions of the caecum and colon and their treatment. The preliminary 50 pages cover the surgical anatomy, symptomatology, and diagnosis, with special reference to carcinoma of the colon. Chapter II, on pathology of tumours of the colon, is contributed by Dr. James Earle. The rest of the work describes very clearly the details of surgical technique in non-obstructed and obstructed

lesions of the colon, and the management of such controversial subjects as benign tumours of the colon, polyposis, and diverticulitis. The author describes the surgical treatment of chronic ulcerative colitis by colectomy, and discusses very fairly the possibility of preserving rectal function by ileo-rectal anastomosis, which he states has been done at the Gordon Hospital in 30 cases without operative mortality and so far without need for an ileostomy. The final chapters deal with regional or segmental colitis, tuberculosis of the colon, volvulus, megacolon, and gunshot or other wounds of the colon. The importance of early diagnosis in blast injuries of the large intestine is stressed, since a mortality of 100% occurs if surgery is delayed for more than 10 hours.

Throughout this work there is a wealth of detail regarding operative techniques as well as pre- and post-operative management. The illustrations, whether diagrams, radiographs, or illustrations of surgical technique, are uniformly excellent. The book will prove of great value to surgeons who have to deal with some of these difficult and debatable subjects, and will help them in the choice of the best treatment; the details which the author has taken the trouble to recount are very important and will greatly assist in bringing cases to a successful conclusion. The production of the book is first-class, and the only misprints noticed are in the spelling of Connell, and Paul-Mikulicz should have been printed thus, otherwise Paul might be taken for a Christian name.

W. B. GABRIEL.

PROGRESS IN ENDOCRINOLOGY

Glandular Physiology and Therapy. Prepared under the auspices of the Council on Pharmacy and Chemistry of the American Medical Association. Fifth edition. (Pp. 611+xx. 80s.) London, Philadelphia, Montreal: J. B. Lippincott Company. 1954.

This book has been produced under the auspices of the Council on Pharmacy and Chemistry of the American Medical Association. The contributors are highly distinguished, among them being such well-known names as Astwood, Bartter, Forsham, Eager Howard, Palmer Howard, Jailer, McCullagh, Reifenstein, Sayers, Segaloff, Selye, and Venning. The work was first published in 1924, when the only hormones available to the therapist were insulin, adrenaline, and extracts of the thyroid and posterior lobe of the pituitary. Twelve years have passed since the last edition, and the contributors have reviewed authoritatively the new work which has been done in their own fields. The result is a book on clinical endocrinology of great value. The secretary to the Committee on Publications of the A.M.A. forecasts that this may be its last edition, as the need for this work has largely disappeared with the production of many excellent books occupied with the same subjects. This book has a special approach, however, which allows the editors to include monographs not to be found in any other work and permits them to exclude complete accounts of many conditions which require comprehensive treatment in the textbooks. There are, for example, chapters on the endocrine management of neoplastic diseases, abnormalities of sexual behaviour and intelligence in relation to endocrine disease, and common misconceptions in endocrine therapy. This last subject is discussed by John Eager Howard with the same wisdom and experience as were shown by Fuller Albright in his famous pages in Cecil's *Medicine*. The text of Howard's exhortation is that most endocrinopathies can be diagnosed from a thorough history and physical examination without extravagant laboratory investigation "performed at great expense to the patient."

The editors have rightly allowed the individual contributors to express opinions which they themselves do not necessarily share, and this may be the reason that we find Werner maintaining that the anterior pituitary has nothing to do with thyrotoxicosis because the TSH blood values are not increased, and Segaloff advising against thymectomy in myasthenia gravis without mention of Keynes's results showing 65% of patients with complete remission or considerable improvement after this operation.

This book is a valuable work of reference, and this edition should not prove to be the last.

D. V. HUBBLE.

DIAGNOSTIC ERRORS

Klinische Fehldiagnosen. By Professor Dr. M. Bürger. (Pp. 550+xv; illustrated. D.M. 59.40.) Stuttgart: Georg Thieme. 1954.

Perusal of this book on clinical mistakes in diagnosis puts one in mind of the old saying that the churchyard covered the doctor's mistakes. Here is a selection, some two hundred of them, all resurrected for the benefit of posterity. This is rather a remarkable book. The mistakes in diagnosis are carefully arranged under the various topics to which they belong, and this makes in all some 21 sections; these comprise the nervous system, metabolism, pancreas, blood diseases, and so on. Each section begins with a discussion on how mistakes in that particular subject may arise, and ends with a summary. The book starts off with a very interesting essay on diagnosis in general. The author distinguishes between "illness" and "sickness"—an interesting point. Diagnosis, we learn, can depend on "harm done" or "good done," on "intuition," and can be confused by the effects of age; it is discussed from the anatomical and topographical angles, with their associated mistakes. Under laboratory diagnosis comes the wise heading, "Omnia sunt dubitanda."

All this sounds rather elaborately German, but there is a lot of common sense in it. Unfortunately the case histories are in very small print and not particularly readable. The wrong diagnosis is given on one side and the correct diagnosis on the other, and the necropsy findings are described where pertinent. Collected over many years, some errors are now quite out of date because newer knowledge and understanding make them unlikely nowadays. These are mistakes of "agnosis," as the author would say. The skiagrams are all first-class, but the cardiograms are old-fashioned. There are a good index and many references.

Altogether this is a most unusual and interesting book, but one to be taken in small doses. One feels that one learns less from one's mistakes than one should; but, alas, however often is it never known that one has been made? Osler once quoted a famous German surgeon as saying, after a wrong diagnosis, "We didn't think right." Nowadays, with so much diagnostic information available, that is probably the main source of error, rather than ignorance or carelessness or lack of skill.

TERENCE EAST.

PRACTICAL BIOCHEMISTRY

Practical Biochemistry: An Elementary Course for Students of Medicine and Science. By G. T. Mills, H. N. Munro, and G. Leaf. Foreword by J. N. Davidson. Second edition. (Pp. 156+x; illustrated. 20s.) Glasgow: John Smith and Son Ltd. 1954.

The appearance of a second edition of this book indicates that it is filling a valuable place in the instruction of medical and science students in practical biochemistry. It is based on the teaching at Glasgow University and is supported by a foreword from Professor J. N. Davidson. It is well written, and the first part covers the list of subjects usually taught in elementary biochemical classes, such as the composition of living matter, enzymes, digestive juices, blood, cerebrospinal fluid, and urine. The second part is more quantitative and starts with an introductory account of colorimeters and polarimeters. Here the rather scanty reference to photoelectric colorimeters is to be regretted, and a little more detail in the section on tissue-function tests would have been an advantage. On the other hand, the inclusion of a section on the paper electrophoresis of serum proteins was noted as a welcome addition.

The book is well produced and moderately priced, and will undoubtedly be useful to all students attending practical classes in elementary biochemistry and to those engaged in their instruction.

N. F. MACLAGAN.

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WINTER COUGHS

As any theatre-goer knows all too well, this is the season of persistent coughs. Usually they are the result of the common cold which has "gone to the chest" and produced a chronic tracheitis or tracheobronchitis. Although many people recover quickly, in some the cough may persist. This is especially true of those who have an inherited asthmatic tendency or are liable to bronchospasm. In children the common cold is often accompanied by a sinusitis which persists after the nasal discharge has ceased, and this is the commonest cause of chronic cough in the child of school age. Influenza epidemics usually reach their peak in the first few months of the year, and the early, dry, irritating cough of this disease is nearly always followed by a more productive tracheobronchitis. In some patients the cough persists for several weeks after recovery from the febrile stage of the illness. If radiographs were taken of the chest of every sufferer from a persistent upper respiratory-tract infection with cough, some would be found to have mottled opacities indicating absorption collapse, a condition which is called benign or localized aspiration pneumonia.

It is clearly desirable to examine carefully all patients who seek advice about a cough which has persisted for more than a short time after an acute respiratory illness. The great majority will be found to have no eradicable cause, and treatment must perforce be symptomatic. For the child with sinusitis, ephedrine nasal drops (¼% in saline) may diminish the severity of the cough. But in general the problem is to decide what sort of cough medicine to administer. Drugs given for the relief of cough fall into three main groups: those intended to liquefy the sputum and help its removal by stimulating the cough centre; those intended to depress the cough reflex; and the antispasmodic drugs which are used when bronchospasm is present as well. In view of the large quantities of cough mixtures which are dispensed—Dunlop *et al.*[1] in a pilot survey found that they constituted 8% of all prescriptions issued—it is remarkable that so few attempts have been made to assess their clinical value. The claim that emetic drugs given in sub-emetic doses will reflexly increase the bronchial secretion has never been verified in the human subject, and yet this is the basis for the use of ipecacuanha, ammonium chloride and carbonate, squill, and senega. However, Alstead[2] was unable to find an increase in the volume or fluidity of the sputum in patients suffering from chronic bronchitis after treatment with ordinary doses of ipecacuanha or potassium iodide.

While the value of expectorant mixtures is doubtful, we are on more certain pharmacological ground when we attempt to depress the cough reflex. Morphine, diamorphine, and methadone ("amidone," "physeptone") are all effective. This was confirmed by Hillis,[3] whose method of provoking cough in normal subjects was to spray the larynx with irritant solutions. Codeine, given orally in doses of 3 gr. (200 mg.) or subcutaneously in doses of 1 gr. (65 mg.), was no more effective than saline injections. It is of special interest that in some subjects saline injections, acting through suggestion, significantly diminished the liability to cough. These observations, interesting though they are, cannot be immediately applied to the cough of respiratory disease, and most clinicians will continue to use codeine phosphate in the treatment of unwanted cough. If morphine is prescribed for this purpose it should be given in doses of at least 1/30 gr. (2 mg.). The usual morphine-containing preparation which is added to cough medicines is the camphorated tincture of opium, and the usual amount of morphine present in so-called sedative cough mixtures is of the order of 1/150 gr. (0.4 mg.) for adults and 1/900 gr. (0.06 mg.) for children. The minuteness of these doses suggests that the term depressant or sedative cough mixture is usually a misnomer. Mixtures such as the ipecacuanha and morphine mixture of the *National Formulary*, which contains chlorodyne, are more likely to be effective, though it seems illogical to combine a sedative and a stimulant expectorant in the same preparation. Methadone in doses of 2 mg. (1/32 gr.) is an effective sedative for a useless cough and is available as a linctus; it may be administered instead of diamorphine, which will no longer be imported or manufactured in Britain.

There is no doubt that the vehicle is important in cough medicines. Syrups have a soothing effect on inflamed upper respiratory passages, and the simple linctus or the squill opiate linctus of the *National Formulary* may give relief without the danger of side-effects. Sudden changes of temperature and hot stuffy

[1] *British Medical Journal*, 1952, **1**, 292.
[2] *Lancet*, 1939, **2**, 932.
[3] Ibid., 1952, **1**, 1230.

atmospheres which may accentuate coughing should be avoided. The tickle in the throat which is so embarrassing in the theatre will usually disappear if a flow of saliva can be induced. Liquorice lozenges or almost any lozenge or sweet may be useful for this purpose. When bronchospasm accompanies a cough, greater relief is usually given by mixtures containing stramonium or belladonna or by ephedrine elixir.

It is highly desirable that more information should be obtained about the relative merits of the many preparations available for the treatment of cough. It would, for example, be fairly easy in general practice to carry out a clinical trial of linctuses. The simple linctus could be used as a control preparation and could be compared with codeine linctus and methadone linctus. This is the sort of investigation which the College of General Practitioners might well sponsor.

CANCER PREVENTION

The rising death rate from cancer in Britain cannot fail to impress our profession with the urgent need for an all-out effort to control this great killing disease. It remains one of the biggest health problems awaiting solution, though the achievements in the control of other diseases since the turn of the century give hope of progress soon in the elucidation of cancer problems, many of which are concerned with those of life itself. Meanwhile the prevention and early detection of cancer are of outstanding importance. In his recent survey R. W. Raven[1] dwelt on this at some length, since certain varieties of cancer are preventable provided the attempt is made, and he referred to the necessity for a vigorous search for possible exogenous carcinogens to whose action the population may be subjected. The prevention of certain forms of cancer in industry shows what can be achieved when the carcinogens are known, and the contemplation of the evidence linking cancer of the lung with smoking tobacco stirs the imagination with what might be done by vigorous action in an enlightened community.

Apart from some controversial data, it is generally agreed that the best chance for a patient with cancer lies in early diagnosis and efficient treatment. Discussing cancer of the cervix uteri, S. Russ[2] contended that if the leading facts were presented to, and understood by, the population it is a fair inference that the death rate from cancer of the cervix would fall. Knowledge is increasing about what lesions are premalignant, and it is important that they should be detected in patients and treated. Hence the need for some cancer education of the public. Moreover, members of all branches of the medical profession need information of advances in this field—doctors in the public health service, for instance, may play an increasingly important part in the future. In addition, more instruction might well be given to medical students, nurses, and some ancillary workers. In this issue of the *Journal* two complementary papers on the subject appear. Drs. J. Walter and E. C. Atkinson (p. 627) call attention to the value of cancer education conducted personally between physician and patient and to the use of medical examination. Assessment of the results of an educational programme may be difficult, and it is interesting to find they detected a cancer of the colon and a cancer of the breast. The scheme's value was indicated also by the number of patients who reported with rectal haemorrhage. As to the detection of premalignant or doubtful lesions, nine male patients with various conditions required attention. Among the female patients were 32 with lesions requiring follow-up examination, and another eight were referred to hospital with lesions requiring excision but proved benign. Pelvic tumours in women are fairly common and symptomless, but can be detected on examination; early diagnosis and treatment of them, whether they are benign or malignant, are necessary, and the premalignant nature of some must not be overlooked. Over a 15-year period C. Macfarlane *et al.*[3] have tried to determine the value of periodic examination in the control of cancer of the female pelvic organs and breast. They discovered seventeen patients with pelvic cancers; of these nine are still alive, with one recurrence. In addition they found 986 benign lesions of the pelvic organs in the entire group of 1,319 volunteers throughout the period; these included 547 inflammatory lesions of the cervix believed to predispose to the development of cancer. A total of 11,203 breast examinations were made on a group of 537 volunteers; 11 breast cancers were found and all had been discovered first by the patients themselves. Six of these patients are alive without recurrence from three to twelve years after treatment; two others died of coronary occlusion without recurrence, three and thirteen years later. This research shows the value of periodic examination of the pelvic organs and breasts in women who are presumably well.

Another aspect of the subject is considered in the *Journal* this week by Miss J. Aitken-Swan and Dr. Ralston Paterson; they discuss delay in seeking advice. The factors responsible for this time lag are analysed after interviewing 75 men and 239 women

[1] Raven, R. W., *Med. Offr.*, 1955, **93**, 59.
[2] Russ, Sydney, *British Medical Journal*, 1953, **1**, 580.
[3] Macfarlane, C., *et al.*, *Amer. J. Obstet. Gynec.*, 1955, **69**, 294.
[4] Raven, R. W., and Gough-Thomas, J., *Lancet*, 1951, **2**, 495.
[5] Paterson, R., *et al.*, *British Medical Journal*, 1954, **2**, 1219.

patients and their relatives. It is recognized that ignorance and fear are important causes of delay, and these workers found that one-quarter of the women with breast cancer were unaware of the possible significance of their symptoms and almost two-thirds of the women with symptoms of cancer of the cervix uteri were similarly ignorant. Another fact brought out in this paper is that probably no significant relationship exists between delay and the standard of intelligence. These authors report too that a lack of confidence in what can now be done for cancer patients causes delay, a lack engendered by seeing the fate of friends with advanced disease and the silence of doctors on the subject of cancer. It is not enough to tell people of the early symptoms of cancer; they should know what action to take in certain circumstances and what can be done to help them. They should be told of patients with many varieties of the disease who are well and living normal lives many years after treatment. With this knowledge the public will be better able to play its part in the prevention and early diagnosis of the disease. The mistaken opinions that many people hold on cancer have been well brought out by R. W. Raven and J. Gough-Thomas[4]; they showed that 17% of the people they studied believed cancer is infectious, 27% believed it is incurable, and another 20% were doubtful. Two main criticisms were levelled at cancer education—that surgeries would be crowded with worried people and that cancerphobia would be created. An experiment in cancer education by Ralston Paterson and co-workers[5] showed that these fears are groundless.

Further efforts in cancer education seem to be desirable, but how best to proceed? The Ministry of Health favours local exploratory work, and this is going on in various places. The ignorance of the public on health matters—including cancer prevention—can be gradually dispelled, and people can also be advised to consult their doctor on the appearance of symptoms or signs. Patients should quickly notice signs of cancer in the mouth, pharynx, larynx, breast, skin, salivary glands, thyroid, rectum, and cervix uteri, yet Mr. Reginald Vick's analysis at page 660 indicates that they often fail to do so. Many women discover accidentally a cancer in the breast; would it not be advisable to teach them breast palpation at definite intervals to identify a single lump? The general practitioner might well consider a periodic health examination for some of his patients, though perhaps further exploratory work such as is described in the *Journal* this week is necessary before its practicability can be finally decided.

NIGHT CRAMPS

Most of us have suffered at some time and in some degree from attacks of cramp in the legs of the type which usually affect the muscles of the calf and which always occur when the subject is at rest. Sir Arthur Hall[1] obtained a history of such nocturnal cramps from 112 of 200 normal persons between the ages of 15 and 80. That the incidence increases with age is suggested by the fact that of the people in his group who were 50 years of age or over, 70% had had cramp. Six of his subjects had had only one fulminant attack, usually following violent exertion; in 15 it was a frequent and troublesome symptom; but in most it was no more than a minor nuisance.

Many people find that cramp may be induced by certain movements of the foot or toes in bed, and they soon learn to avoid making them. Others have noted the tendency for it to occur after unaccustomed exercise, as indicated by Hall. Nicholson and Falk,[2] for example, reported the occurrence of severe nocturnal cramps in twenty-three young soldiers during their period of primary training, which included a good deal of marching and drill. In this group the commonest associated abnormality was some minor defect in the feet, such as pes planus. Nocturnal cramps are also a frequent complaint during the later stages of pregnancy. It has been suggested, too, that venous thrombosis in the legs may be a predisposing factor, though there appears to be no association with arterial insufficiency.

The cause of this curious malady is not known, though there is no lack of unproved hypotheses. Abnormal irritability of skeletal muscle fibres or the neuro-muscular junction, calcium deficiency, alkalosis, and "disequilibrium" of muscle electrolytes are suggestions that all have their advocates. The most popular treatment in recent years has been the administration of quinine. Harvey[3] showed that quinine diminishes the ability of skeletal muscle to respond to tetanic stimulation because of an increase in the refractory period of the muscle fibres, an action comparable to the effect of quinidine on heart muscle. Moss and Herrmann[4] gave quinine 3 gr. (200 mg.) twice daily to twenty patients whose night cramps were severe enough to disturb sleep and often lasted for months at a time. Relief was obtained within twenty-four hours, and the cramps returned when a placebo was substituted. After treatment for up to ten weeks it was often possible to stop the quinine without the cramps returning. Gootnick[5] also reported good results from the administration of quinine to thirty patients.

In a recent study of the problem, Lippmann and Perchuk[6] have confirmed the value of quinine salts in reducing the incidence and severity of the cramps. They also found, however, that a number of other forms of treatment were effective: these included oral dihydro-

[1] *Lancet*, 1947, **2**, 231.
[2] *New Engl. J. Med.*, 1945, **233**, 556.
[3] *J. Physiol. (Lond.)*, 1939, **95**, 45.
[4] *Amer. Heart J.*, 1948, **35**, 403.
[5] *Arch. Intern. Med.*, 1943, **71**, 555.
[6] *N.Y. St. J. Med.*, 1954, **54**, 2976.
[7] *Obstet. Gynec.*, 1953, **1**, 94.

tachysterol, dilute hydrochloric acid or diphenhydramine, intravenous calcium gluconate, and supportive bandaging. Of all the remedies tried the most consistently efficacious, the least toxic, and the cheapest was calcium lactate, given in doses of 10 gr. (650 mg.) three times daily. The theory that there may be a deficiency of ionized calcium in these subjects has also been supported by Page and Page,[7] who found that in two groups of obstetric patients the incidence of cramps was much higher in the group drinking larger quantities of milk. They suggest that the high content of phosphorus-containing proteins in milk leads in these patients to a rise in the inorganic phosphorus and a fall in the diffusible calcium in the blood, and they found that relief from the cramps could be obtained either by reducing the intake of milk or by administering a calcium salt free from phosphorus, such as the lactate.

IMMUNIZATION BY THE KELL ANTIGEN

The discovery of the anti-human-globulin test, or Coombs test,[1] enabled certain blood group antibodies hitherto undetectable to be recognized in many human sera. One consequence was the discovery of three new blood group systems known by the names Kell,[2] Duffy,[3] and Kidd.[4] The first of these to be discovered, and the most important clinically, was the Kell system.

Of the English population some 8% carry the Kell (K) antigen on their red cells. The corresponding antibody has been found in the serum of a number, now considerable, of Kell-negative persons. In every case it has been attributable to immunization either by pregnancy with a Kell-positive foetus or by transfusion with Kell-positive blood. Examples are now known of Kell antibodies active in albumin or even in saline, but it remains true that the only proved reliable method of detecting the presence of anti-Kell antibodies is the indirect Coombs test, and that with most of the available testing sera the same test must be used for detecting the Kell antigen. However, Grove-Rasmussen *et al.*[5] claim to have devised a sensitive technique using human AB serum as a suspending medium.

Family investigations[6] have shown that Kell reactions are controlled by a pair of allelic genes K and k. Most Kell-positive persons are heterozygotes of genotype Kk, but a small minority (theoretically 0.16% of the English population) are homozygous KK, and these if transfused with blood from a kk or Kk individual, or pregnant with a Kk foetus, are liable to become immunized to the k antigen. This was first shown to occur by Levine *et al.*, who named the k antigen "Cellano."[7] Owing to the great rarity of KK individuals, immunization by k is of very little practical importance.

Immunization by K is, on the other hand, of considerable importance. Unlike Rh immunization, where only a minority of persons are at risk through lacking the immunizing antigen D, the majority of the population are liable to undergo Kell immunization through lacking the antigen K, but the risk is diminished by the fact that this antigen, unlike D, is present in only a minority of donor bloods. Wiener[8] has shown that, if D-negative persons are given two widely spaced injections of D-positive blood, 40% of them become immunized. Following Mollison,[9] we may further assume that in clinical practice (if Rh testing were not performed) such immunization would be detected only during the direct matching test preceding yet a third transfusion, and if the blood intended for use were D-positive; in a similar way we may assume that Kell immunization, if due solely to transfusion, will be detected only on the occasion of a third transfusion or intended transfusion of K-positive blood to a K-negative recipient. From the respective frequencies of the D and the K antigens, it may be calculated that such a state of affairs will arise with only one-hundredth of the frequency with which it arises for D. Hence if D and K were of equal immunizing power, the relative frequencies of detection of immunization by D and by K would be in the ratio of 100 to 1. Since the ratio between the numbers of known cases is in fact of this order, it appears probable that in blood transfusions K is an antigen comparable in immunizing power with D. Using somewhat similar arguments, Wiener, Brancato, and Waltman[10] have shown that, in pregnancy immunization, K is a very much weaker antigen than D. The severity of such cases as do occur of transfusion reactions and of haemolytic disease due to anti-K appears to be comparable to that of the cases due to anti-D. One death has with good reason been attributed to such a transfusion reaction.[11] Some severe cases of haemolytic disease have been described, but none of them appear to have been fatal.

Now that most mothers and practically all transfusion donors and recipients are tested for the Rh factor, the danger due to that factor has greatly diminished, while that due to the Kell antigen has presumably remained stationary and hence become relatively more important. But the rarity of anti-K testing sera shows that the absolute danger of Kell immunization is not great. Certainly the supplies of serum would not permit universal Kell testing of blood donors, or even the extensive testing that has been recommended,[12] nor would the diversion of manpower to this task be justifiable while so many other greater medical needs remain unsatisfied. But some action can be taken to avoid or mitigate the effects of immunization by the Kell antigen as well as by other antigens outside the Rh system. Some and perhaps many immunizations due to a combination of transfusion and pregnancy would be avoided if it were an absolute rule never to transfuse a woman with her husband's blood[13]—now a rare practice in England, but probably not so in some countries. Another precaution

[1] *Brit. J. exp. Path.*, 1945, **26**, 255.
[2] Coombs, R. R. A., *et al.*, *Lancet*, 1946, **1**, 264.
[3] Cutbush, M., *et al.*, *Nature* (*Lond.*), 1950, **165**, 188.
[4] Allen, F. H., *et al.*, ibid., 1951, **167**, 482.
[5] *Amer. J. clin. Path.*, 1954, **24**, 1211.
[6] Sanger, R., *et al.*, *Rev. Hémat.*, 1949, **4**, 32.
[7] *Science*, 1949, **109**, 464.
[8] *Proc. Soc. exp. Biol.* (*N.Y.*), 1949, **70**, 576.
[9] *Blood Transfusion in Clinical Medicine*, p. 200. 1951, Oxford.
[10] *J. Lab. clin. Med.*, 1953, **42**, 570.
[11] Ottensooser, F., *et al.*, *Blood*, 1953, **8**, 1029.
[12] André, R., *et al.*, *Sem. Hôp. Paris*, 1954, **30**, 3703.
[13] Chown, B., *Canad. med. Ass. J.*, 1949, **61**, 419.

is the use of the Coombs test in direct matching of all transfusions, at least to women before and during the child-bearing period and to all persons who either have been transfused or have been pregnant. Needless to say, the detailed serological investigation of all cases of transfusion reaction and of haemolytic disease of the newborn, while not preventing trouble, will prevent its being made worse by further incompatible transfusions. As part of this detailed investigation, it may be found desirable to search for anti-K even in sera already known to contain anti-D, for those persons who readily make anti-D may also show an enhanced capacity to make anti-K. Where such investigations are undertaken, any extensive series of results obtained should be tabulated and published as a guide to the existence or otherwise of such an enhanced immunizability.

FOOD-POISONING

Even more dismal results than in previous years are revealed by the Public Health Laboratory Service's analysis of food-poisoning outbreaks to the end of 1953.[1] In England and Wales in 1953, 5,277 outbreaks were recorded, compared with 3,519 in 1952 and 3,347 in 1951. At least 15,000 persons were reported as having symptoms, and 51 died. The organism causing death was a salmonella in 46 cases, *Staphylococcus aureus* in 2, and unknown in 3. Outbreaks included 492 of a general nature, 422 in families, and 4,363 sporadic cases. The causal organism was *Salmonella typhi-murium* in 2,405 cases, other salmonellae in 709, staphylococci in 132, *Clostridium welchii* in 25, various in 6, and unknown in 2,000. The cause was unknown mainly in those outbreaks which were not investigated because of the long delay between occurrence and reporting.

The types of salmonella isolated included 2,838 endogenous and 243 exogenous types. In this context "endogenous" means common in England and Wales and widely recognized before 1940; "exogenous" refers to organisms little known in this country before then. The endogenous organisms infecting the largest groups of cases were *Salm. typhi-murium* 2,438, *Salm. thompson* 84, *Salm. bovis-morbificans* 81, *Salm. enteritidis* var. *jena* 80, *and Salm. newport* 50. The exogenous organisms infecting the largest groups of cases were *Salm. anatum* 30, *Salm. oranienburg* 29, *Salm. bareilly* 25, *Salm. montevideo* 18, and *Salm. minnesota* 17.

As in previous years, about two-thirds of the outbreaks were attributed to infected meat, and about 80% of these outbreaks were associated with processed, made-up, or reheated meat. Milk was the vehicle of infection in 12 outbreaks (7 due to fresh, 4 to dried, and 1 to canned milk). Two of the outbreaks caused by fresh milk, due to *Salm. typhi-murium*, were large: one, which affected about 300 persons, was caused by unpasteurized T.T. milk; the other, which affected over 100 children, was caused by pasteurized school milk. In the latter outbreak the milk was infected during bottling and after pasteurization. Of the outbreaks caused by dried milk (also infected with *Salm. typhi-murium*), one attacked about 100 schoolchildren in Yorkshire and another consisted in a series of related school outbreaks in Surrey and London which were traced to the same dried-milk plant. Infected eggs caused 25 outbreaks, of which 18 were due to duck's eggs. In 21 of the 25 outbreaks due to eggs the causal organism was *Salm. typhi-murium*. Infected sweetmeats caused 27 outbreaks; 12 of these were associated with cream buns and cream cakes and 9 with trifle, vanilla slices, and custards. Investigation of 166 outbreaks showed the source of infected food to be as follows: 58 in canteens, 42 in restaurants, 30 in shops (butchers' shops 13, cooked-meat shops 10), 21 in institutions, and 15 in private parties.

The reported incidence of food-poisoning and dysentery (reviewed in these columns recently[2]) is increasing. Whether the rise is due to better reporting or not—and the reported cases are only a fraction of the true incidence—it is evident that these conditions are responsible for a vast amount of preventable illness and in 1953 for almost 100 deaths. Far too many handlers of food have deplorable standards of hygiene, combining dirty habits with an attitude of indifference. The task of reducing the menace they are to the community was discussed at some length in Parliament last year, and the Food and Drugs Amendment Bill received its third reading on November 11.[3] The Food Hygiene Advisory Council to be set up under this new legislation may well recommend that carefully devised propaganda, among other measures, should be directed at all food-handlers who serve the public, and the cost would probably be small against the benefit it would bring the public. Certainly the high and still rising numbers of food-poisoning and dysentery outbreaks point to an urgent need for preventive action.

TREATMENT OF ANURIA

The prognosis of acute renal insufficiency is good provided the patient can be kept alive long enough to permit structural repair and resumption of function in the distal tubule.[1] During the anuric phase treatment is by controlling so far as possible the disorders of water and electrolyte metabolism which result from the temporary exclusion of the kidneys as working organs from the system. The undesirable effects that arise when the kidneys are out of action depend partly upon inability to eliminate water, except in necessarily small amounts through the skin and bowels, and partly upon the accumulation in the extracellular fluid of toxic end-products of endogenous protein breakdown which are normally excreted in the urine. The danger of forcing fluids in these cases has been emphasized.[2 3] Water intake should be restricted to that amount which will allow for the insensible loss, usually about 1 litre in 24 hours, depending on the surface area of the patient and his bodily and environmental temperature. To this should be added an amount of water equal to whatever

[1] *Monthly Bull. Minist. Hlth (Lond.)*, 1955, February, 34–42.
[2] *British Medical Journal*, 1955, **1**, 401.
[3] Ibid., 1954, **2**, 1236.

may be lost by abnormal routes, such as by vomiting or diarrhoea. Fluids may be given in the form of a mixture of carbohydrate and fat, whose high-calorie content minimizes the breakdown of endogenous protein and release of potassium.[4] The diet may increase the tendency of uraemic patients to vomit, and Bull *et al.* give an emulsion of peanut-oil and dextrose solution by continuous intragastric drip.[3] This lessens the tendency to vomiting, and fluid loss is minimized by returning any vomit, filtered, into the drip. If vomiting is so troublesome that the patient cannot retain the gastric tube, slow intravenous infusions of 20–50% dextrose solution given through a catheter into the superior[5] or inferior vena cava[6] have been given successfully.

Large quantities of carbohydrate help to keep down the level of potassium in the extracellular fluid. In concentrations of more than 8.0 mEq/l. potassium is toxic to the heart, as is shown in cases of pure hyperkalaemia by abnormalities of the electrocardiogram. Phosphate may accumulate in the plasma from much the same causes as potassium may. This leads to a depression of plasma calcium, which enhances the toxicity of potassium excess, and obscures the abnormality of the electrocardiogram due to it.[11] In an emergency potassium may be driven back temporarily into the cells by the administration of insulin and glucose,[8] but Bull believes that toxic concentrations are not often encountered if the patient receives the conservative protein-free high-carbohydrate solution.[9] Meroney and Herndon[7] found that American battle casualties in Korea with acute renal insufficiency could not tolerate oral fluids even when given by tube. Calcium, added to the intravenous solution they employed, mitigated the toxicity of potassium. Although ion-exchange resins in the sodium phase have been used successfully to withdraw potassium into the bowel, Meroney and Herndon's patients could not take them, and when they were given rectally they were not effective. If such relatively simple expectant measures fail, the more heroic and rather more risky procedures of peritoneal[10] or intestinal[1] dialysis, or the use of the artificial kidney,[11] or exchange blood transfusion[12] are often beneficial.

It is also important to combat infection and so prevent further tissue breakdown. Therefore any devitalized tissue should be widely excised.[11] Bull[9] recommends that all anuric patients should receive a single daily prophylactic injection of 1 million units of penicillin. Nevertheless antibiotics given even in ordinary doses to patients unable to excrete them may be toxic.[13]

[1] Black, D. A. K., and Stanbury, S. W., *British Medical Journal*, 1948, **2**, 1101.
[2] Lattimer, J. K., *J. Urol.*, 1945, **54**, 312.
[3] Bull, G. M., *et al.*, *Lancet*, 1949, **2**, 229.
[4] Borst, J. G. G., ibid., 1948, **1**, 824.
[5] de Keyser, R., *et al.*, *Ned. T. Geneesk.*, 1949, **93**, 2386.
[6] Scott Russell, C., *et al.*, *Lancet*, 1954, **1**, 902.
[7] Meroney, W. H., and Herndon, R. F., *J. Amer. med. Ass.*, 1954, **155**, 877.
[8] Bywaters, E. G. L., and Jockes, A. M., *Proc. roy. Soc. Med.*, 1948, **41**, 420.
[9] Bull, G. M., ibid., 1952, **45**, 848.
[10] Frank, H. A., *et al.*, *Ann Surg.*, 1948, **128**, 561.
[11] Kolff, W. J., *Amer. J. Med.*, 1952, **12**, 667.
[12] Dausset, J., *Arch. intern. Med.*, 1950, **85**, 416.
[13] Bateman, J. C., *et al.*, ibid., 1952, **90**, 763.

SCOTTISH HOSPITAL COSTS

Recently we drew attention[1] to the annual costing returns of hospitals in England and Wales. Those for Scottish hospitals for the same year (1953–4) have now appeared.[2] They, too, are drawn up under subject headings. The claim is made for these returns, as it was for the English and Welsh ones, that they enable comparisons to be made between the costs of maintaining a patient in hospitals of the same size and the same type. But to what extent are comparisons between Scottish and English hospitals valid, for at first sight it is cheaper to maintain a patient north of the border? The cost per patient per week in a general hospital of more than 300 beds is £13 9s. 9d. in England and Wales and £11 5s. 5d. in Scotland. In both cases this calculation makes allowance for what is called the vacant-bed factor—that is, for beds staffed but not used. In fact, the Scottish returns are drawn up on a basis that distinguishes between expenditure that is directly dependent on the numbers of in-patients, expenditure that is partly dependent on numbers and partly standing, and expenditure on hospital overheads such as rates and maintenance of buildings and administration. The English returns merely divide the expenditure between running charges —lumping the cost of patients' and the staff's food together—and standing charges, and adjust the total cost by the vacant-bed factor. Further, the Scottish returns extract out-patient expenditure "on the basis of the actual or estimated costs of the services rendered"; in England and Wales the gross total cost of maintaining an in-patient is again merely adjusted by the arbitrary formula that five out-patient attendances equal one in-patient day. This difference in methods of costing invalidates any comparison of items of expenditure in English and Scottish hospitals. The Scottish system of extracting out-patient expenditure altogether, instead of including it under all the subject headings and then making an adjustment in the total expenditure, certainly makes it easier for a Scottish hospital to compare its figure for, say, drugs and dressings with that of another. But what makes the total cost of maintaining a Scottish patient lower by comparison with England is the exclusion of specialists' salaries in the Scottish returns. Their inclusion would probably make the Scottish weekly expenditure much the same as the English.

One contrast can, however, be pointed out. In Scotland the cost of maintaining a patient in a teaching hospital is only 15s. to £2 a week higher than in an ordinary general hospital. In England and Wales the higher cost is about £3 10s. for provincial teaching hospitals and as much as £9 for London teaching hospitals. Scottish teaching hospitals come within the sphere of the regional boards, and the distinction in status between a teaching and non-teaching hospital are not so marked as in England. The high extra cost of independence ought to set some boards of governors thinking.

[1] *British Medical Journal*, January 8, p. 92.
[2] *Analysis of Running Costs of Hospitals. Year ended March 3, 1954.* Edinburgh: H.M.S.O. 9s. 6d.

EMERGENCIES IN GENERAL PRACTICE

OBSTRUCTED LABOUR

BY

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The end-result of obstructed labour, if unrelieved, is rupture of the uterus, unless the mother dies of exhaustion and shock before rupture takes place. If the uterus ruptures, the maternal mortality varies with the cause of the obstruction and the availability of expert obstetrical care, but it is always very high. It is rare for the foetus ever to survive. These considerations serve to emphasize the seriousness of neglecting actual or potential obstruction during labour.

In modern obstetric practice in Britain, rupture of the uterus following obstructed labour is rapidly becoming a rarity, although it still presents a problem of major importance in backward countries, where adequate antenatal care is not available to the large mass of the population. Obstruction is nearly always the result of malposition of the foetus or else of contraction of the maternal pelvis; less commonly it is due to atresia of the soft tissues of the birth canal or obstructing tumours. Reference to any standard textbook of obstetrics will supply a list of the malpresentations, the different types of pelvic contraction, and the soft-tissue tumours that may lead to obstruction, and there is no point in enumerating such a series here. In any case they are mostly well known and obvious. Nor will space permit of a detailed description of every individual condition that may cause obstruction. It must therefore suffice to discuss in general terms the prophylaxis and early detection of potential obstruction, and the principles underlying the management of established obstruction.

Theoretical Considerations

Within recent years we have come to understand the behaviour of the uterine muscle in labour much more clearly as the result of the work of Reynolds and others using the Lorand tocograph and other methods of obtaining tracings of uterine contractions for accurate study and analysis. This confirms two fundamental facts about uterine action in obstructed labour.

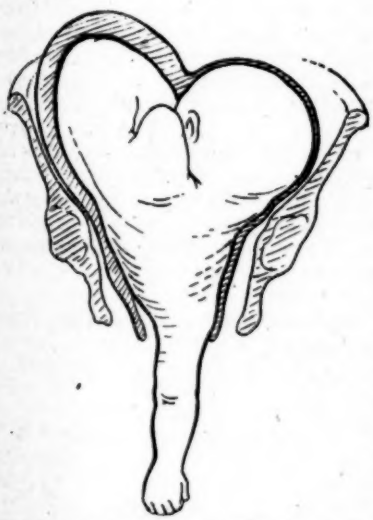

FIG. 1.—Prolapsed arm: retracted upper segment, thinned lower segment.

1. In the presence of obstruction the pattern of uterine contractions is essentially normal; that is to say, the upper segment muscle contracts more and more strongly while the lower segment remains passive. The lower segment becomes progressively thinner (Fig. 1), and through this thinned lower segment rupture will ultimately take place. Before this occurs, however, a pathological retraction ring (Bandl's ring), which is detectable clinically, forms at the junction of the two segments.

2. The response of the primiparous uterus to obstruction is in marked contrast to that of the multiparous one. In the former the response is a gradual increase in tonus, associated with diminishing activity. The lower segment may therefore not dilate and labour may be very prolonged, with less risk of rupture. In extreme cases the mother may die, undelivered, of shock and exhaustion; if she is ultimately delivered and survives, extensive soft-tissue sloughing may occur as a result of prolonged pressure causing ischaemia and fistulae between the rectum or bladder and the genital tract; before either of these disasters occurs the foetus may die of anoxia from progressive increase in uterine tone. In the multiparous patient, on the other hand, the response to obstruction is rapidly increasing contractions and thinning of the lower segment. Hence the uterus may rupture soon unless the obstruction is overcome relatively early in the course of labour. This difference in behaviour of the uterus is of great practical importance, and is mentioned to emphasize the greater need for urgency and speed in the management of obstruction in the multipara than in the woman labouring for the first time.

Apart from the danger of rupture of the uterus or extensive post-partum soft-tissue sloughing, there is the danger to the mother of ascending infection. This risk is especially great if the membranes rupture early and labour is protracted. In addition to the risk of injury from direct pressure, the foetus may perish from placental anoxia due to a hypertonic uterus; if it survives a prolonged labour, pulmonary or other infection, initiated during labour, may develop in the neonatal period.

From the practical point of view it will be best to consider potential or actual obstruction at different levels in the pelvis, because there are important clinical differences.

Obstruction at the Pelvic Brim

The commonest causes of this are: (*a*) maternal: contraction of the pelvic inlet, fibroids, or ovarian cysts; and (*b*) foetal: transverse lie, brow presentation, and hydrocephalus. In all these conditions there is no foetal presenting part in the pelvic cavity during the last weeks of pregnancy and in the early stages of labour, and the diagnosis is usually made before the onset of labour. However, in many cases it may be necessary to allow labour to start before certain obstruction can be detected. It is often surprising how a fibroid, even when low down in the uterus and below the foetal head, may become drawn up during labour, thereby allowing the head to descend into the pelvic cavity. Only a cervical fibroid must inevitably lead to obstruction, unless caesarean section is carried out. Should obstruction develop owing to an ovarian cyst impacted in the pelvis, caesarean section is again necessary. Such a cyst is usually adherent, and attempts to displace it upwards as recommended in older textbooks may result in rupture of or haemorrhage into the cyst.

The problems of brim contraction are many and varied, and can only be discussed here in general terms. Inlet contraction should be suspected in all cases of high head in the last weeks of pregnancy or early in labour, although disproportion and obstruction will develop in only relatively few of such cases. In the presence of a normal-sized foetus obstruction to labour is almost certain if the true conjugate is less than 9 cm., whereas if it is more than 10 cm. over

95% will end in spontaneous or assisted vaginal delivery. It is in the intermediate cases with conjugate measurements of between 9 and 10 cm. that trial of labour is especially indicated.

It is sometimes stated that it is impossible to determine whether there is or is not true cephalo-pelvic disproportion unless and until the cervix is fully dilated so that the head can descend in the birth canal. While this may be true in theory it is not entirely true in relation to inlet contraction. Early in the course of labour in these cases the membranes rupture and if the presenting part is unable to pass the pelvic brim because of disproportion the cervix may never become fully dilated, and yet obstructed labour may develop and the lower uterine segment become so thinned that it ruptures. In this type of case the differential diagnosis between delay due to cephalo-pelvic disproportion and that due to incoordinate uterine action of the hypertonic variety may be very difficult indeed. This in point of fact is a not uncommon clinical problem. Errors in judgment account for some at any rate of those patients whose first labour is terminated by caesarean section for alleged cephalo-pelvic disproportion and who are subsequently delivered successfully per vaginam of a similar-sized or even larger baby. Whilst trial of labour steers the patient between the Scylla of unnecessary caesarean section and the Charybdis of dangerous induction, it is not an infallible means of determining cephalo-pelvic disproportion in all cases.

The management of inlet contraction can be considered briefly under three headings.

1. Prophylaxis

Careful assessment of the high head in the last weeks of pregnancy is essential. In the multiparous patient who has previously lost a baby during the course of an obstructed labour, premature induction of labour is often advisable. Remember that the size of the baby tends to increase in succeeding pregnancies, and that obstructed labour may develop in a woman who has had several successful vaginal deliveries.

2. Early Detection

It is important to diagnose as early as possible that delay in labour is due to disproportion which will eventually cause obstruction if neglected. Early detection while the mother's condition is good and the foetus still alive and well is imperative if good results are to be obtained. Marshall's figures presented to the 12th British Congress of Obstetrics and Gynaecology, analysing 2,276 caesarean sections, showed no maternal mortality if caesarean section was undertaken within six hours of the onset of labour, 0.35% if undertaken within six to twenty-four hours, but 2.49% if labour had lasted over forty-eight hours. Nevertheless, the differential diagnosis of the cause of delay during the first stage of labour between disproportion and incoordinate action is sometimes far from easy. In some cases both conditions may in fact be present.

In cases of disproportion the pattern of uterine action is essentially normal. Upper segment tone increases, but at first there is normal relaxation between contractions which are regular and of normal strength. As the duration of labour increases the lower segment becomes more and more dilated and thinned until ultimately a Bandl retraction ring is formed which is visible in the abdomen. With the drawing upwards of the junction between the upper and lower segments the bladder too is drawn up, so that it becomes easily visible even though it may contain only a few ounces of urine. On vaginal examination the cervix tends to hang down from the head, which is lodged tightly in the brim and becomes progressively more oedematous from prolonged pressure. There is no spasm of the cervix during a contraction of the upper segment. A large caput forms on the head and moulding is excessive. In brim contraction asynclitism is exaggerated and posterior parietal presentation is a bad prognostic sign. The head cannot be pushed down between contractions, nor does it descend during a contraction. Moir and others have shown the value of lateral radiography during labour in helping to arrive at a prognosis. Once the labour is obstructed lower segment caesarean section must be carried out before foetal distress or death occurs.

3. The Management of Established Obstruction

In some cases the foetus may be dead, and in multipara rupture of the uterus may be imminent. The alternatives of caesarean section and craniotomy are often debated. There is a natural tendency to avoid caesarean section if the foetus is already dead, but the hazards of craniotomy if the head is above the brim, the lower segment dilated and on the point of rupture, and the cervix not completely obliterated cannot be stressed too strongly. In such cases perforation and embryotomy carry a grave risk of shock, haemorrhage, and trauma. Modern antibiotics have made caesarean section the safer alternative for the mother even though the foetus is dead. The exception to this is the hydrocephalic head. Here, perforation alone is all that is necessary to collapse the head and spontaneous delivery will take place.

The management of obstruction due to the impacted shoulder or brow presentation requires equally careful consideration. In the absence of pelvic contraction the brow

FIG. 2.—Internal podalic version.

presentation can usually be corrected manually to a face or vertex if the cervix is at or near full dilatation, and then a forceps delivery can be carried out. If diagnosed earlier in labour, very soon after rupture of the membranes, bipolar podalic version may be safely undertaken (Fig. 2). Sound obstetric judgment and experience are necessary to decide whether it is safe to carry out internal version when an arm or shoulder presents. If this is done the uterus should always be explored afterwards to make sure that the lower segment has not been ruptured. It is seldom if ever necessary to do a caesarean section for an impacted shoulder presentation with a dead foetus. Decapitation, using a decapitation saw, is not too dangerous or difficult to be undertaken by an experienced obstetrician. The patient is nearly always a multipara and the birth canal dilated so that the neck can be pulled well down into the pelvis before decapitation is undertaken. The transverse lie in the primigravida, due to gross inlet contraction, placenta praevia, or uterine fibroid, is an entirely different problem and always calls for caesarean section even though the child is dead.

Obstruction Associated With Mid-Pelvic Contraction

Mid-pelvic contraction occurs at the level of the ischial spines, the interspinous diameter falling below the normal 10 cm. and the posterior sagittal diameter of the mid-pelvis falling below 5 cm. Mid-pelvic contraction is often associated with the android-shaped pelvis, the fore-pelvis being narrowed and the anterior surface of the sacrum straightened. Often the head descends in the transverse instead of the oblique diameter of the pelvis and becomes arrested at this

level—deep transverse arrest. It is also at this level in the pelvis that obstruction may develop if contraction is present and the foetus is presenting as an extended breech.

The development of obstruction in the mid-pelvis will in most cases only become apparent in the second stage of labour. At the beginning of labour the head may be fixed in the brim, if not actually through it; the first stage proceeds normally and often rapidly, but delay occurs in the second stage. In some cases which are complicated by incoordinate action the cervix may not become quite fully dilated. This seldom occurs if uterine action is normal.

Failure to recognize mid-pelvic contraction accounts for a great many stillborn babies, because only rarely is the contraction so great that the child cannot be pulled through the contracted diameters with axis-traction forceps if enough force is used. In many cases if the occiput is posterior or transverse, correction of the position with consequent reduction of the diameter of the foetal head will enable a successful forceps delivery to be completed. In many cases the position of the foetus is favourable and yet the application of forceps fails to deliver the baby when reasonable force is used. Only experience can educate the obstetrician to know just what strength of pull is reasonable and safe following application when the head has not yet passed the ischial spines.

The application of forceps at this level has come to be known in recent obstetric literature as a trial of forceps. It is something that should never be undertaken deliberately outside hospital and then only by an experienced obstetrician. Few cases of trial labour should be carried to this limit, but it is important for the doctor to realize the possibility of failure of forceps being due to mid-pelvic contraction which may not have been diagnosed before labour. He may encounter such an emergency unexpectedly in domiciliary practice. If the head is very moulded he may think it is below the mid-pelvis, but in that case need experience no shame at removing his forceps and sending the patient to hospital. Caesarean section may be undertaken even at that late stage.

In hospital trial of forceps is legitimate practice, even when these difficult cases have been studied thoroughly by radiography during the antenatal period. It requires much more experience and courage to admit that the baby cannot be delivered safely by forceps than it does to pull out a dead or damaged baby by sheer force. If the baby is already dead, owing to obstruction at this level, perforation and extraction is usually preferable to caesarean section and does not carry the same risk of maternal shock and trauma as when the foetus is obstructed at the pelvic brim. Mid-pelvic contraction may cause difficulty in the delivery of the extended breech, because impaction and obstruction may occur. It is deemed by some that a trial of labour is not possible in a breech delivery. It is reasonably fair to say, however, that if the extended breech is delayed in the mid-pelvic cavity the cause of the delay is not primarily the extended legs but disproportion, due either to mid-pelvic contraction or a very large child. Bringing down the leg may enable the baby to be delivered, but the foetal loss associated with this particular procedure at this level of obstruction is very high and in my opinion caesarean section is justified under these circumstances.

Obstruction at the Outlet

While delay at the outlet is relatively common, true obstruction is rare. It may occur if the foetus is abnormally large and/or in the posterior position. It may occur if there is true bony contraction. Some authorities deny the existence of the latter in the absence of inlet or mid-pelvic contraction, but most obstetricians of experience encounter the occasional funnel pelvis. Contraction of the intertuberous diameter below the normal 10 cm. does not necessarily lead to outlet dystocia provided the posterior sagittal diameter is generous, so that the head can be born posteriorly instead of close to the symphysis pubis. Very rarely obstruction at the outlet is due to extensive stenosis of the vaginal introitus due to scarring, or to soft-tissue tumours of the vagina (fibromata, cysts of Gartner's duct, etc.). Vulval scarring enough to cause outlet dystocia is hardly ever seen in this country, but in the Kikuyu women of Kenya and in other native tribes where female circumcision is still practised it is a relatively common occurrence.

The management of outlet obstruction is always difficult if the foetus is still alive and normal. Generous episiotomy, if necessary passing wide of and behind the anus, increases the available space enormously, so that the baby may be delivered safely with forceps even face to pubis. Bony contraction so gross as to cause genuine outlet obstruction only rarely remains undetected until so late in labour. The choice in such cases falls between a difficult caesarean section and the operation of symphysiotomy. The latter operation has received something of a revival lately, but is only rarely undertaken and then only at the hands of those who are experienced in the operation. If the child is already dead or is abnormal—for example, hydrocephalic—perforation is not difficult or dangerous at this level.

While outlet contraction and disproportion are not uncommon in a minor degree and in association with contraction of the brim or cavity, true outlet obstruction due to bony contraction is very rare. Delay and minor disproportion can usually be overcome by generous episiotomy, an operation also necessary in cases of gross cicatrization of the soft tissues.

Space does not permit of more than a passing mention of obstructed labour associated with organic rigidity, stenosis, or atresia of the cervix. Suffice it to say that it is a relatively uncommon condition, most cases of so-called rigid cervix being in fact examples of cervical spasm or associated with hypertonic uterine inertia. Nevertheless, cases of organic stenosis do occur; reports of complete annular detachment of the cervix from the pressure of the advancing head have been recorded. In most cases caesarean section is necessary, but incision of the cervix (Dührssen's incisions) may be carried out, but only if bony disproportion at all levels in the pelvis can be ruled out for certain.

Modern antibiotics have made caesarean section late in labour a procedure which is relatively safe for the mother and child. By its use we can often escape from the consequences of poor judgment and carelessness. The better our antenatal care the fewer will be the examples of obstructed labour that we shall encounter, except those which occur during the course of a planned trial of labour. A steady decrease in the incidence of obstructed labour is one of the most spectacular successes of modern antenatal care.

Next article on Emergencies in General Practice.—"Haematemesis and Melaena," by Dr. T. Hunt.

Refresher Course Books.—Copies of the first two volumes of collected articles from the Refresher Course for General Practitioners published in the *Journal* are still available at 25s. (postage 1s.) each. The first volume contains 55 articles and the second 60. Each article has been revised and brought up to date by its author.

These books may be obtained from the Publishing Manager, B.M.A. House, Tavistock Square, London, W.C.1, or through any bookseller.

An outstanding problem in Singapore to-day, according to the *Medical Department Annual Report, 1953*, is the provision of facilities for out-patients. Immediately before the 1939–45 war the annual attendance of out-patients was 87,000, in 1947 it was over 305,000, while by 1953 the figure had reached 957,000. "This development," writes Dr. W. J. VICKERS, the director of medical services, "is quite different to that in the United Kingdom and elsewhere in that the public has created and demands a direct patient–clinic service without the intervention of the private general medical practitioner." The demand has been met by the Government providing a National Health Out-patient Service in its hospital divisions.

PROGRESS IN CANCER REGISTRATION

A SURVEY OF THE DEVELOPMENT OF A CANCER RECORDS BUREAU FROM 1945 TO 1954

BY

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The first steps in the introduction of a scheme for recording cases of cancer on a national basis were taken by the Radium Commission, which, from 1930 until the National Health Service Act of 1946, controlled the supply of radium to the radiotherapy centres. During the war the collection of records from the centres was suspended.

In 1939 the Cancer Act required the council of every county and county borough to make and submit for the approval of the Ministry of Health arrangements for adequate facilities for treating cancer patients in their area. They were also advised to provide for the keeping of records, which were to be submitted ultimately to an authority designated by the Ministry. In 1944 the Ministry instituted registration cards and abstract cards for approved centres. The Radium Commission introduced similar arrangements for their centres. In June, 1945, the Radium Commission was nominated temporarily as the statistical bureau for collection and analysis of cancer records. This duty was taken over by the General Register Office in 1947, with whom it rests to-day.

Formation of the South-western Regional Bureau

When the war was over, the county councils of Gloucestershire, Somerset, and Wiltshire and the county boroughs of Bristol, Bath, and Gloucester got to work. They formed a cancer advisory committee and appointed the late Professor Rendle-Short as medical adviser. At that time they were responsible not only for records but for the facilitation of the diagnosis of cancer, for the treatment of patients suffering from that disease, and for the payment for care, maintenance, and travelling expenses of all such patients. One other point should be emphasized here—the principle, strongly supported by the Ministry, was that hospitals should not be recognized for service under the Cancer Act unless the surgical staff were whole-time consultants not engaged in private practice. This caused many delays and hampered the development of the scheme.

A records office was, in the first instance, established at the Bristol General Hospital, a records officer was appointed and subsequently four clerks to assist him, the whole under the clinical control of the medical adviser, and the administrative control of the house governor of the teaching group of hospitals. This organization worked smoothly, and by March, 1948, about 2,500 new cases were dealt with annually and 1,900 survivors were followed up, making a total of 4,400 cases handled.

Similar arrangements were made in Plymouth for the counties of Devon and Cornwall, and Mr. Duncan-Wood was appointed director for that area in 1947. It was not until 1948 that the Royal Devon and Exeter Hospital and the Torbay Hospital (Torquay) were included.

The Cancer Act was repealed by the passing of the National Health Service Act in 1946, and on the appointed day in 1948 the Regional Hospital Board took over the whole organization of the South-western Region, with offices at Bristol and Plymouth and cancer record clerks at Redruth, Torbay, and Exeter.

In 1952 the medical adviser at Bristol and the director at Plymouth resigned and one director was appointed in charge of the entire region and the two offices (October, 1952). Some co-ordination between the two areas had already taken place, but each area produced its own report in its own chosen form. In 1952 the reports of cancer statistics for the two areas were combined in one volume, but in 1953 the figures for the whole region were grouped together and critically analysed under each site of cancer in the body.

As both offices had been running—though only covering a much smaller number of hospitals—since 1945, it has been possible to produce a five-year survival rate for the entire region, and since 1948 all hospitals in which cancer is treated have been included. Thus a much more valuable statistical review has been possible.

Advances in Registration

Further advances in cancer registration are being carried out. An effort is being made to get as near the 100% registration as is possible. In order to do this, hospitals of all types (including mental hospitals, geriatric units, etc.) have been prevailed upon to send in records of their cancer patients. Medical officers of health have co-operated by sending in detailed returns of all cancer deaths at regular intervals. The analysis of these returns is providing much useful information, not the least important of which is the pin-pointing of those hospitals which are failing to register their patients with the bureau. It is hoped, ultimately, to register even those patients who never go into hospital at at. Surgeons throughout the region have been asked to register their private patients with the bureau, and the majority of them have agreed to do so.

Every patient registered has a case-history sheet, which contains all the available details, often from more than one hospital. From this history an abstract card is prepared, giving essential information, which is passed on to the office of the Registrar-General. Marginal punch cards are also prepared for every patient registered, and these cards are of inestimable value in any survey that may be required, such as the annual report, and for any special statistical investigation that is carried out. The information they contain is available to any surgeon who asks for it, and we have been able to answer many inquiries.

All these developments have greatly increased the number of registrations and the work of the bureau, which has entailed a small increase of staff.

Personnel of the Bureau

The personnel is now arranged as follows: (1) The director is responsible for the control of the work of the bureau and for the production of an annual report. This involves attendance at the two offices of the bureau, one in Bristol and one in Plymouth. (2) A records officer at each place: both of whom have been with the bureau since before the appointed day. (3) The requisite number of graded clerks—four at Bristol and three at Plymouth. Recently an extra clerk has been appointed at each office to cope with the rising tide of registrations. There are also cancer clerks at Exeter, Torbay, and Redruth.

Annual Report, 1953

Below is given an analysis of the annual report of the bureau for the year 1953—issued in December, 1954. The total population of the Region was 2,897,087 (1951 census), and Table I indicates the work being done.

TABLE I

	Bristol	Plymouth	Combined Total
Total No. of cases registered to end of 1953 ..	23,136	16,043	39,179
No. of new cases registered in 1953	3,883	2,705	6,588
No. of cases followed-up in 1953	10,000	6,183	16,183

The report is circulated to all the regional hospital boards, to every surgeon in the region who treats patients suffering

from cancer, to all hospitals and medical officers of health within the region, to the Ministry of Health, the General Register Office, to all relevant medical committees, including local medical committees, indicating that more copies are available for any interested general practitioners, to all radiotherapeutic departments, to all medical schools in the British Isles, and to the medical press.

It shows the state of registration in 1953 for each hospital in the two areas, the distribution of registrations by counties, and, in the Plymouth area, is accompanied by special tables showing the distribution of cancer registration in clinical areas. The report contains statistical tables which indicate under each anatomical site the total number of patients treated in both the Northern (Bristol) and the Southern (Plymouth) areas, the method of treatment, and the number of survivors. It indicates the five-year+ survival rate under each site and comments on the clinical history of the survivors.

Beneath the heading of certain "accessible" sites—the breast, cervix uteri, and uterus—the patients are classified under the recognized stages (Manchester staging) and the survival rate is indicated under each stage. When the numbers of untreated cases appear to be of statistical significance they are given.

The order in which the malignant growths are taken follows, so far as is possible, the classification of the World Health Organization. Two examples of the way in which the statistical tables are set out are shown in Tables II and III.

TABLE II.—*Malignant Growths of Large Intestine (Excluding Rectum)*

	Total Cases		Patients Alive	
	Bristol	Plymouth	Bristol	Plymouth
Radical surgery	95	62	41	31
Palliative "	71	50	—	5
Not treated	76	35	—	—
Total	242	147	41	36
	389		77	

Five-year+ survival rate=20%.

The comments on survivors in Table II are as follows: Age—youngest 32; sex—men 27, women 50. *Treatment*:—Partial colectomy, 60; exteriorization and subsequent closure of colostomy, 12; colostomy only, 3; surgery and radiotherapy, 2. *Sites*:—Sigmoid and pelvic colon, 31; transverse colon, 12; caecum, 7; ascending colon, 6; descending colon, 6; hepatic flexure, 5; splenic flexure, 5; rectosigmoidal junction, 5.

TABLE III.—*Malignant Growths of Mouth (Excluding Tongue)*

	Total Cases		Patients Alive	
	Bristol	Plymouth	Bristol	Plymouth
Surgery	11	2	8	1
" and radiotherapy	—	6	—	1
Radiotherapy	32	30	3	3
Radium	15	10	7	9
Total	58	48	18	14
	106		32	

Five-year+ survival rate=30%.

The comments on survivors in Table III are as follows: Age—youngest 30, oldest 83; sex—men 23, women 9. The series includes one case of rhabdomyoma of the cheek, treated by excision. *Sites*:—Floor of mouth, 10; alveolus, 7; palate, 6; cheek, 5; tonsil, 2; lower jaw, 1; fraenum, 1. *Biopsy* was positive in most cases.

Space does not allow of the setting out of all the tables *in extenso*. In Table IV is given a summary of the figures under each anatomical site. The breast, cervix, and uterus are dealt with in a later table.

TABLE IV.—*Summary of Registrations According to Anatomical Site*

Site of Malignant Growth	Total Cases	Patients Alive	5-year+ % Survival
Lip	256	142	55
Tongue	141	25	17·7
Salivary glands	54	34	63
Mouth (excluding tongue)	106	32	30
Pharynx, larynx, etc.	170	25	15
Oesophagus	203	4	2
Stomach	492	25	5
Large intestine (excluding rectum)	389	77	20
Rectum	437	61	14
Pancreas	40	1	2·5
Thoracic organs	408	11	2·7
Ovary	179	43	24
Prostate	206	30	15
Testis	59	35	59
Penis	56	24	43
Kidney	59	17	29
Bladder	163	38	23
Skin (malignant melanoma)	79	25	32
Eye	18	11	61
Brain and central nervous system	29	9	31
Thyroid	52	15	29
Bone	137	16	11·6
Lymphadenoma	120	33	27·5
Leukaemia	125	9	7

Comments on some of the five-year+ survival rates shown in Table IV are as follows.

Lip.—It is distressing to note the relatively high mortality for what is, after all, an "accessible" cancer. Many of the patients presented themselves at a late stage and were treated by radiotherapy.

Tongue.—The high mortality of cancer of the tongue is demonstrated. No fewer than 48 of these patients presented themselves late and were treated by radiotherapy alone. Only two of these survived for five years.

Salivary Glands.—Parotid glands involved in 31 survivors, submandibular in only 3. All proved malignant cases.

Oesophagus.—The appalling mortality of cancer at this site is illustrated.

Stomach.—This includes nearly 500 cases with only 5% survival. No fewer than 3 patients thought to be inoperable in 1948 or earlier are alive and well to-day.

Large Intestine.—Already dealt with.

Rectum.—34 abdomino-perineal survivors, 11 perineal, 6 conservative resection, 2 with hysterectomy, and 2 inoperable.

Pancreas.—Evidently no cases of mistaken diagnosis in this series.

Thoracic Organs.—7 of the survivors treated by pneumonectomy, 4 by radiotherapy only.

Testis.—Surprisingly high survival rate. 26 seminomata, 6 teratomata, 1 adenocarcinoma. No pathological report in 2 cases. In only one patient were the testes not in the scrotum.

Malignant Melanoma of Skin.—32% alive and well to-day. All proved malignant melanoma histologically. 5 cases excision only; 15 excision and radiotherapy with 7 removal of glands; 4 wide removal.

Thyroid.—Total thyroidectomy and radiotherapy in 2 cases. Partial thyroidectomy and radiotherapy in 9 cases. Radiotherapy alone 3 cases. Radium after wedge resection 1.

Bone.—Seven cases of osteogenic sarcoma amongst the survivors.

All the figures in Table V and throughout the report cover the work of a considerable number of surgeons, and every patient was treated between 1945 and 1948.

The table indicates that the earlier the condition is diagnosed and efficiently treated the better the prognosis. The later the stage the higher the mortality.

TABLE V.—*Some Five-year Survival Rates*

Site of Malignant Growth and Stage	Total Cases	Patients Alive	% Survival
Breast:			
I	531	331	62
II	328	130	40
III	107	33	31
IV	228	18	8
Cervix:			
I	73	43	59
II	102	35	34
III	93	17	18
IV	32	4	13
Uterus:			
Early	123	76	62
Late	88	21	24

Summary

An account is given of the gradual development of a regional cancer records bureau.

In view of the increasing interest in cancer registration, it is hoped that this account may help those who are in the process of organizing such centres.

An analysis of the statistical review contained in the annual report of the bureau is given—showing total number of cases under each anatomical site and number of survivors. A five-year+ survival rate is given in percentages under each site. A clinical survey of survivors is detailed.

Under certain "accessible" cancers the survival rate at the various stages of the disease is indicated and the vital importance of early diagnosis and treatment is stressed.

My thanks are due to the officers of the South-western Regional Hospital Board for their unfailing help, and to the cancer records officers, without whose help this report could not have been compiled.

EPISTAXIS

At the clinical meeting for general practitioners held at the Institute of Laryngology and Otology, Gray's Inn Road, London, on February 11, Mr. C. GILL-CAREY discussed "Epistaxis."

Nine out of every ten cases of epistaxis were not serious, he said, in that there would be no grave underlying disease or risk of undue blood loss. But nose bleeding caused alarm, and the doctor's prestige was enhanced by efficient treatment. Most often the source of the bleeding was on the septum anteriorly, and could be controlled without tight packing by using a small plug of some non-irritating material such as gauze or cotton-wool impregnated with petroleum jelly or bismuth, aided by digital pressure on the ala nasi by the patient. If the bleeding recurred and cauterization became necessary, Mr. Gill-Carey suggested local infiltration with procaine and adrenaline injection (*B.P.*) before the removal of the plug. This would produce temporary haemostasis as well as analgesia of the nasal skin and mucous membrane. For severe bleeding from the anterior part of the septum he advised coagulation by diathermy.

When is it Serious?

Epistaxis, even when mild, might be the first sign of some serious underlying disease, such as a blood disorder, a malignant neoplasm in the nose, hypertension, or diphtheria. These and other possibilities, although not common, had always to be borne in mind.

Arterial disease was responsible for most cases of intractable bleeding, and in a third of them the bleeding artery was relatively inaccessible. Such patients were seldom benefited by a combination of nasal and post-nasal plugging. It was better to ligate the internal maxillary artery via the antrum or the ethmoidal arteries through an orbital incision. In these patients there was a real danger of coronary thrombosis if the blood flow was allowed to continue unchecked for too long.

Replying to questions, Mr. Gill-Carey expressed a poor opinion of ice in treatment: it had little effect on the bleeding. Nor did he advocate soaking plugging material in vasoconstrictors such as adrenaline, as vasodilation would follow the vasoconstriction. Packing an already infected nose, he agreed, increased the risk of sinusitis, and if packing was necessary for more than a few hours systemic antibiotic therapy should be given. Asked about the treatment of hereditary telangiectasis by ethinyloestradiol, Mr. Gill-Carey said that one of his own cases had been partially controlled by it, and that the treatment appeared to offer real relief in this grave and crippling disease.

Reports of Societies

CORONARY THROMBOSIS: ROLE OF DIET AND ATHEROSCLEROSIS

A joint meeting of the Sections of Pathology and Epidemiology and Preventive Medicine discussed "Coronary Artery Disease" at the Royal Society of Medicine on March 1. Professor L. P. GARROD, president of the Section of Pathology, was in the chair.

Morbid Anatomy of Atherosclerosis

Professor T. CRAWFORD (Department of Pathology, St. George's Hospital, London) opened the discussion with an illustrated account of the morbid anatomy of coronary atherosclerosis in man. The yellowish-white plaques of atheroma were well known, but it was often difficult to tell from post-mortem examination what effect they had had on the calibre of the vessel. It was certainly not true that large plaques necessarily narrowed the lumen. He had studied this problem by injection techniques using stereoscopic radiography to demonstrate irregularity and narrowing, which were particularly common in the descending branch of the left coronary artery. Normally the intima of the coronary arteries was thicker than that of comparable arteries elsewhere, even in young children. Sections through the earliest lesions showed a slightly thickened intima in which a varying amount of fat had appeared. This might be either diffusely scattered or collected into the cytoplasm of macrophages which came to lie in groups immediately beneath the endothelium. A varying amount of the material was birefringent, and chemical examination showed the presence of cholesterol and its esters as well as neutral fats. In more advanced lesions the fatty material was separated from the lumen by a progressively thicker layer of rather acellular laminated collagen fibres. Eventually the lumen became distorted, and thrombosis was apt to occur.

If the patient survived the initial thrombosis, one of two things might happen: either a lumen was quickly re-established by retraction of the thrombus to the side of the vessel, or there was a more gradual recanalization of the thrombus by fusion of the capillaries which grew into it during the process of organization. These might eventually proliferate to form a type of cavernomatous transformation of the segment of vessel. However, this was often only of temporary benefit to the circulation because the thrombotic process was frequently repeated in the new channels. The most important recent advance in the understanding of atherosclerosis was the demonstration by Duguid that fibrin incrustations occur on the intima and are quickly covered by a fresh layer of endothelium. Organization of these fibrin deposits, continued Professor Crawford, took place both from the vessel lumen and from the vasa vasorum. Small incrustations thus became organized throughout and resulted in nothing more than some fibrous thickening of the intima: but larger or superimposed deposits might be incompletely organized, a layer of unorganized amorphous debris persisting between the zones of surface and medial organization.

Experimental Production of Atherosclerosis

Dr. J. E. FRENCH (Sir William Dunn School of Pathology, Oxford) described some of the ways in which atherosclerosis can be produced in experimental animals. Spontaneous atheromatous lesions were rare in animals, he said, but could be produced artificially by procedures which caused gross disturbance of the normal lipoid metabolism. This might be achieved by adding excess cholesterol to the diet of rabbits or chicks, and also by feeding cholesterol to dogs with hypothyroidism and to Cebus monkeys maintained on a diet deficient in methionine. A somewhat different type of arterial lesion had been described in rats on a diet deficient in choline.

The lesions produced by cholesterol feeding in experimental animals showed an accumulation of cholesterol, cholesterol esters, and other lipoids, mostly within macrophages, in the arterial intima, and in this respect resembled the lesions of atheroma in man.

The intimal deposits seemed to be derived from the plasma lipoids. Hypercholesterolaemia was an obvious factor, but was probably less important than the relative proportion of the different plasma lipoids. Thus the severity of lesions might be reduced in rabbits by measures which, even in the presence of marked hypercholesterolaemia, elevated the relative concentration of phospholipid and neutral fat. A further important factor was the type of complex which the cholesterol formed with the plasma proteins. In animals developing atheroma the greater part of the plasma cholesterol was in the form of β-lipoprotein—a reversal of the situation in the normal animal. Analysis of the plasma β-lipoprotein complex in rabbits and Cebus monkeys developing atheroma had suggested further that the severity of the lesions might be correlated with the concentration in the plasma of a particular cholesterol-containing component of this complex. This component was not present in the blood of normal animals. In addition to this component the plasma of cholesterol-fed rabbits contained visible lipoid particles responsible for about 50% of the total cholesterol. Unlike the particles present in alimentary lipaemia, the chylomicra, these particles in the cholesterol-fed rabbit were not dispersed by the heparin-clearing reaction and might not be able to leave the blood stream in a diffusible form.

From these considerations, Dr. French suggested that abnormal cholesterol-containing lipoid complexes from the plasma might accumulate in the arterial intima in one of two ways: either relatively small molecular components of the β-lipoprotein complex might permeate the endothelium and precipitate in the intimal connective tissue; or the larger particles might adhere to the surface of the endothelium, there being taken up by macrophages and incorporated in the intima by overgrowth of endothelial cells.

Fat in the Diet

Professor H. W. FULLERTON (Department of Medicine, Aberdeen), in considering the role of diet in the production of atheroma, thought that progress had been delayed by two factors: the belief that the lesion is a primary degeneration, and the assumption that cholesterol plays a primary part in causation. The amount of cholesterol required to produce atheroma in animals was enormous, out of proportion to the rather modest amounts in the human diet. Moreover, atheromatous plaques often contained other lipids. The most notable change in the nation's dietary over the last 50 years had been the increase in the consumption of fat, and there was little doubt that the incidence of coronary artery disease had also increased. Fat intake was greatest in the higher-income groups, where coronary disease was also greatest. Mortality rates were high in countries with the greatest consumption of fat: they fell in Norway when fat intake dropped during the war.

The striking incidence of atheroma in patients with hypercholesterolaemia from various causes suggested that the disease might be related in some way to the lipaemia that occurs after fatty meals. Accordingly the speaker had studied the effect of alimentary lipaemia on the mechanism of clotting. He found a striking decrease in clotting time three to four hours after a meal containing 85 g. of fat, compared with controls on a normal ward diet. Those patients whose clotting time was shortened had also macroscopic lipaemia. Most people at some time must presumably exceed the critical level of fat intake at which clotting tends to increase, but this could hardly be the only factor in atheroma. Constitutional and sex differences were important, and there might be variations in fibrinolytic activity. The blood flow in the coronary arteries was greatly reduced during ventricular systole, and might almost cease in the left coronary; this would facilitate the deposition of preformed fibrin, and might be the starting-point of atheroma.

Atherosclerosis Not the Whole Answer

Dr. J. N. MORRIS (Social Medicine Research Unit of the Medical Research Council) described the preliminary results of a nation-wide inquiry into the epidemiology of coronary atherosclerosis. A curious feature of mortality statistics in the last 30 years had been a flattening out of the death rate in middle-aged males. This was due mainly to the high incidence in them of ischaemic heart disease and carcinoma of the bronchus. In 1950 the highest death rate from ischaemic heart disease occurred in the professional classes and the lowest among semi-skilled workers. Deaths were more common in town than in the country; and sudden death from it was twice as frequent in London bus drivers as in bus conductors.

A review of necropsy records at the London Hospital had not shown any increase in the pathological evidence of coronary atherosclerosis comparable to that which had occurred clinically. There were other puzzling relationships between the atherosclerosis and ischaemic heart disease. It was therefore decided to investigate the prevalence of coronary atherosclerosis and its various manifestations in a large necropsy series. An appeal made to pathologists throughout the country for help had met with a very generous response. The limitations of this kind of investigation were obvious; but some interesting pointers had already appeared from a breakdown of the preliminary figures. A miscellaneous group of patients—those dying from causes other than ischaemic heart disease or conditions liable to give rise to it—were used as the basis of a model of what is going on in the population as a whole. At least three-quarters of men had naked-eye pathological evidence of coronary atherosclerosis by the age of 45, said Dr. Morris. Ten to twenty per cent. of men between the ages of 45 and 70—the percentage rose with age—had many, or severe, lesions comparable to those in patients with ischaemic heart disease (though actually in the group of patients with clinical evidence of the disease one-fifth of the necropsies showed only moderate changes in the coronary arteries). If the results of this analysis could be accepted as roughly applicable to the general population, these estimates of 10 and 20% had to be compared with estimates of 1 and 5% at the same ages for those with clinical ischaemic heart disease, and the annual mortality from the disease of 1 in 1,000 in the former group with that of 1 in 150 in the latter group. It should not be assumed, therefore, that the causes of coronary atherosclerosis are sufficient to cause ischaemic heart disease. Additional social factors might be involved in the production of the clinical disease, and these might offer opportunities for preventive action.

Discussion

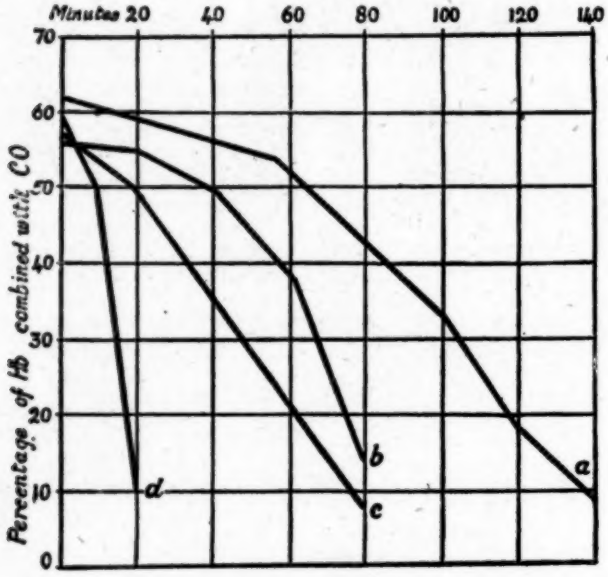
In the discussion which followed, Dr. J. E. COTES (Cardiff) gave details of a small survey of miners in the Rhondda Valley. The incidence of clinical ischaemic heart disease was significantly greater in the heavier miners and in those with higher blood pressures. Dr. Z. A. LEITNER (London) mentioned that the α-lipoprotein concentration was lower in women than in men, and could be decreased by castration and increased by testosterone. A number of questions were asked about the part played by stress. At the moment diet and occupation seemed to be more important factors, but Dr. MORRIS hoped that psychological and endocrinological methods could soon be applied to population studies of cardiovascular disease in middle age.

Correspondence

Gases in Artificial Respiration

SIR,—The interesting and erudite article by Dr. K. W. Donald and Professor W. D. M. Paton (*Journal*, February 5, p. 313) concludes "that in first-aid practice carbon dioxide should not be administered with oxygen in the resuscitation of subjects requiring and receiving artificial respiration." The article is subtitled: "A Report to the Medical Research Council by its Committee for Research on Breathing Apparatus for Protection against Dangerous Fumes and Gases." Therefore, presumably, a main purpose of the article is to influence doctors to advise those likely to administer first aid, such as firemen and mine rescue workers, not to use oxygen and carbon dioxide mixtures. Is this conclusion correct in regard to poisoning by the commonest dangerous gas—carbon monoxide? It may be, but the report does not present much direct evidence on the point but reaches its conclusion by arguments based on general physiological considerations or by analogy with anoxic situations *other than carbon monoxide poisoning*.

I am not seeking to question that carbon dioxide has been excessively administered to many kinds of anoxic patients. I wish only to focus attention on the special, but



common, first-aid situation of carbon monoxide poisoning in which the main necessity is to accelerate the rate of excretion of carbon monoxide from the blood so that the haemoglobin may again carry oxygen. The use of oxygen with added carbon dioxide in the treatment of carbon monoxide poisoning was introduced by Henderson and Haggard,[1] and the graph of excretion rates of carbon monoxide here reproduced is from one of their papers[2] and shows curves derived from the treatment of dogs, gassed to the point of death, with (*a*) air, (*b*) oxygen, (*c*) air and carbon dioxide, and (*d*) oxygen and carbon dioxide. They claim to have confirmed these findings with men gassed up to 50% saturation. Their explanation for the greater efficacy they claimed for oxygen and carbon dioxide, over oxygen alone, was that breathing is markedly reduced when victims are removed from the poisonous atmosphere and that carbon dioxide, by stimulating respiration, facilitates the effective contact of inhaled oxygen with the capillaries of the lungs. The views of Henderson and Haggard gained world-wide acceptance, and oxygen with carbon dioxide became the standard treatment for carbon monoxide poisoning.

My personal interest in the subject is because I was for nine years (1928–36) responsible for the treatment of all cases of acute poisoning admitted to the Middlesex Hospital. In each of these years I dealt with a few cases of carbon monoxide poisoning (on one occasion five cases at once). In the first two or three years I was not aware of the work of Henderson and Haggard and treated the patients with oxygen. Later I switched to oxygen and 7% carbon dioxide, which seemed to be very much more effective—indeed, life-saving—in roughly comparable cases. I can confirm that the breathing of severely gassed patients is often depressed and that the administration of oxygen and carbon dioxide strongly stimulates it.

The only evidence directly relating to carbon monoxide poisoning, weakening the claims of Henderson and Haggard, cited by Dr. Donald and Professor Paton are papers by Nicloux *et al.*[3] and Walton *et al.*[4] These papers did not flatly refute the findings of Henderson and Haggard, and, indeed, agreed that elimination of carbon monoxide was slightly faster with oxygen and 5% carbon dioxide than with oxygen alone; they only did not find as great a difference as did Henderson and Haggard. All these papers, including those of Henderson and Haggard, appear to be based on rather a slender amount of experimental work. They were published around 30 years ago, and to-day seem almost as little fitted to settle a very important practical question, involving the possible saving of many lives, as indirect physiological reasoning or the very fallible clinical impressions of those, like myself, who have thought oxygen, with 5% or 7% carbon dioxide, life-saving in carbon monoxide poisoning.

I would like to ask Dr. Donald and Professor Paton: (1) Have they personal experience *in carbon monoxide poisoning* of the comparative effects of treatment with oxygen alone and with oxygen and carbon dioxide? (2) Can they cite from the literature more evidence, directly relating to carbon monoxide poisoning, than appears in their paper? (3) Do they not think that there is need for more comprehensive experimental work in *carbon monoxide poisoning* (possibly sponsored by the M.R.C. Committee) before a firm and final recommendation is made to abandon oxygen and carbon dioxide treatment?—I am, etc.,

London, W.1. H. L. MARRIOTT.

REFERENCES

1 *J. Pharmacol.*, 1920, **16**, 11.
2 *J. Amer. med. Ass.*, 1922, **79**, 1137.
3 *C.R. Soc. Biol. (Paris)*, 1925, **92**, 174 and 178.
4 *Arch. intern. Med.*, 1926, **37**, 398.

*** We showed Dr. Marriott's letter to Dr. Donald and Professor Paton, and their comments are printed below.—ED., *B.M.J.*

SIR,—Before turning to Dr. H. L. Marriott's specific inquiries, we must emphasize again that the committee, and our paper reviewing the background of the committee's recommendation (*Journal*, February 5, p. 313), were concerned with *first-aid practice*, taking account of the full range of emergencies which may be encountered, and of the fact that correct diagnosis of such cases may not be within the power of the first-aid worker. There was no intention of trying to relieve doctors of their responsibilities for treatment in hospital according to their own judgment, although we hope they will consider the arguments we have advanced. Further, we do not quite agree with Dr. Marriott about priorities. The *first* task, even in cases of carbon monoxide poisoning, is to relieve the anoxaemia; the promotion of carbon monoxide elimination by any harmless means comes second.

As regards his questions: (1) One of the authors has treated a considerable number of cases of coal-gas poisoning, both with oxygen and with oxygen and CO_2, but, like

Dr. Marriott, would attach no weight to his "fallible clinical impressions" in the absence of detailed comparisons. Both authors have had an intensive personal and experimental experience of both respiration-stimulating and anaesthetizing concentrations of CO_2 in oxygen. This may or may not reassure Dr. Marriott, but we do not believe our personal experience to be especially relevant to the discussion.

(2) We should have included a reference to the work of Schwerma *et al.*,[1] and express our regret at not doing so. The authors of this modern and detailed work, like Nicloux *et al.*[2] and Walton *et al.*,[3] "could not confirm the great increase of carbon monoxide elimination with added carbon dioxide reported by Henderson and Haggard"[4] (to quote our original words). We were aware that there is *some* increase in elimination, and chose our words with care. The question is whether the increase is sufficient to justify the use of carbon dioxide in treatment. Schwerma *et al.* think not, and end their paper by saying: "Since carbon dioxide plays no demonstrable part in fortifying cardiac function, and its addition to oxygen confers no further value in resuscitation, the inevitable conclusion is that it is an unnecessary therapeutic adjunct." The various investigations differ in the details of treatment of the CO-poisoned animals. But it is significant that, for instance, Schwerma *et al.*, Nicloux *et al.*, and Walton *et al.* all agree as to the rate of elimination of CO in the untreated animal (50% eliminated in 60 minutes) and differ quite substantially from Henderson and Haggard (15% eliminated in 60 minutes). In the face of this and similar findings we think it dangerous to place too much reliance on the latter's figures.

(3) There is no doubt that more work on all aspects of resuscitation is badly needed, and it is the responsibility, not of an M.R.C. committee alone, but of all those interested in the subject to foster or initiate it. We would, of course, carefully reconsider our conclusions in the light of such work. But a recommendation is needed now, taking into account new knowledge about the actions of carbon dioxide. On the evidence available, we would feel culpable if we made any other recommendation.—We are, etc.,

K. W. DONALD.
W. D. M. PATON.

Birmingham, 15.

REFERENCES

1 *J. appl. Physiol.*, 1948, **1**, 350.
2 *C.R. Soc. Biol. (Paris)*, 1925, **92**, 174 and 178.
3 *Arch. intern. Med.*, 1926, **37**, 398.
4 *J. Pharmacol.*, 1920, **16**, 11.

Topical Analgesia of the Urethra

SIR,—May I suggest a refinement to the method of producing topical analgesia of the urethra described by Dr. R. Bryce-Smith (*Journal*, February 19, p. 462) which I have found most useful in males? It is to pass a short rubber catheter into the urethra and connect the bakelite nozzle and tube to it.

By this means, it is easier to squeeze and massage the "xylocaine gel" into the posterior urethra. Without the catheter, adequate analgesia of the posterior urethra is, in my experience, often difficult to obtain.—I am, etc.,

B. G. FORREST.

Rotherham.

Endocrine Treatment in Psychiatry

SIR,—Dr. R. E. Hemphill in his most interesting paper on "Endocrine Treatment in Psychiatry" (*Journal*, February 26, p. 501) suggests that aggressiveness and paranoid thinking occur "in extreme conditions, and operation seems to be very seldom indicated." This I do not think is true. In my experience the women whose psychoses responded so dramatically to adrenalectomy were suffering from an average amount of virilism and we saw many more severely affected who had no psychosis. I thought that the cases associated with psychosis were those who had a peculiar psyche and who were homosexually orientated before the adrenal dysphasia. It was the effect of the adrenal hormones on their peculiar mentality which produced mental illness. The psychosis was much more striking than the virilism. I am sure that Mr. L. R. Broster[1] would confirm this.

My reason for pointing this out, and the importance of it, is that I believe that there are many women with virilism in mental hospitals who would benefit from early adrenalectomy but who are never given the chance because it is not generally appreciated that psychosis and virilism are often associated. It was a thousand pities that owing to the war and other reasons our work on the relationship of psychosis and virilism, which seemed so promising, has terminated. Dr. Hemphill is absolutely correct in stating that "further research in the relationship between hypercortical adrenalism and aggressive paranoid behaviour might be well worth while."—I am, etc.,

CLIFFORD ALLEN.

London, W.1.

REFERENCE

1 Broster, L. R., *et al.*, *The Adrenal Cortex and Intersexuality*, 1938. Chapman and Hall, London.

Treatment of Pulmonary Tuberculosis

SIR,—Being interested in a clinic associated to some extent with Dr. T. W. Lloyd's sphere of action, I should like to comment on his letter (*Journal*, February 26, p. 538), which advocates the abandonment of pneumothorax and pneumoperitoneum treatment.

Our refill clinic sees each week some 30 or so persons, most of them well and cheerful, many of them working, and all of them apparently unaware of the undesirable nature of the therapy that is being wrought upon them. The hardship of regular attendance they sustain with fortitude, and, in a mainly rural community, the occasion is almost festive. On the whole they seem to thrive rather better than our other patients.

Most of these people have been considered and rejected elsewhere for major thoracic surgery, and nowadays a patient has to be in either pretty good or pretty bad trim to slip through that net and find himself at the receiving end of a pneumothorax needle. The suggested alternative is prolonged chemotherapy. I have insufficient experience of this to pass precise judgment, but should be most reluctant, not merely for nostalgic reasons, to close our refill clinic and trust to chemotherapy to replace entirely the beneficial presence of a little air in the right place. Prolonged chemotherapy may perhaps prove to be the treatment of the future, but I rather fancy that, if we were to abandon pneumatic treatment completely in its favour, future years would see an unknown number of long-term chemotherapy cases presenting themselves at the clinic, their gluteal regions indurated by streptomycin, their stomachs ulcerated by P.A.S., and their morale deflated by an isoniazid hangover, beseeching us to do something for their reopened cavities. We might then be glad enough to brush the dust from the pneumothorax box and, after due bronchoscopy—if a bronchoscopist is available—perpetrate yet again a pneumothorax or pneumoperitoneum.—I am, etc.,

T. V. R. PHILIP.

Hereford.

SIR,—It is stated in your leading article (*Journal*, February 12, p. 403), "During the last six years the annual decline in mortality from respiratory disease has averaged 15% while the average decline for the previous ten years was a mere 1.5%," and, as I anticipated in my publications 10 years ago, this is being attributed to mass radiography, antibacterial drugs, and quantity of medical care. But those of us who began our efforts to stamp out tuberculosis nearly 50 years ago and who have spent some years in studying the homes of the people, learnt that tuberculosis is a disease fostered and spread by bad housing and a low standard

of living. The pioneers in tuberculosis prevention (I rank my late chief, Sir John Robertson, in the foremost field) learnt this, and accordingly they planned sanatoria treatment on the basis of a first-class home, where rest and tranquillity could be secured, while the larger problems of housing and standard of living were slowly improved. Their success with prevention and treatment is shown abundantly in the progressive decline in the deaths. The further contributions to that end, meals and milk at schools, even better housing and standards of living within the last six years, have brought even better results.

As I clearly indicated before its introduction, mass radiography can contribute nothing useful to a good medical service, but its progressive use seems to demonstrate the degeneration of clinical medicine in its revelations of massive disease which has been overlooked. We have as much right to claim that mass radiography has reduced the deaths from tuberculosis as we have to claim that its concomitant increased employment has caused the progressive rise in pulmonary cancer. It has shown what the pathologists taught us 50 years ago, that we have all had tuberculous infection, but that does not matter if it does not affect the mortality or morbidity. As for the value of antibacterial drugs, we are told by some tuberculosis specialists that these are now so good the patients can be allowed not only to stay at home but to go to work. The disasters to nurses which have been so treated are recorded in the Prophit Tuberculosis Survey report.[1] If that was true why not put the treatment into the hands of the general practitioner? He with his knowledge of the home can treat the patient better than the specialists, who have lost much clinical sense by almost complete dependence upon the results of tests easily and readily obtained by scribbled initials or even the use of a rubber stamp. Since it has been proved that good housing and standard of living are far more important than "quantity of medical care," why not devote all our resources accordingly?

More particularly during the last 30 years I have watched the progressive exclusion of the practitioner from the treatment by the development of a specialized jargon assisted by the great abuse of radiology and the progressive "refinement" of meddlesome interference. It is very doubtful if the success achieved by those measures, used in hundreds of thousands of cases and now quietly being discarded for more modern mutilations—measures which have converted treatment from what was the most pleasant and enjoyable into that which aggravates the disease and induces horror in the patients, the gravity of whose mental distress no one can estimate—can equal that secured by good home treatment. The unfortunate use of the general hospitals has contributed to the selfish aspirations of the specialists, who scoff at the original treatment in sanatoria at the cost of the patients. Dr. P. B. Schofield (*Journal*, February 19, p. 480) is fortunate in his experience, others have lost their lives from "treatments" by those who did not know the risks. I have seen complete recovery in the happiest of circumstances of most extensive disease without "the numerous investigations and treatments" he thinks "the patient needs."

Why not revert to the principles which dictated the development of sanatoria rather than keep those which have brought about their abandonment? Then our improved standard of living will eradicate the disease.—I am, etc.,

Birmingham, 15. JAMES F. BRAILSFORD.

REFERENCE

[1] Daniels, M., *et al.*, *Tuberculosis in Young Adults: Report on the Prophit Tuberculosis Survey, 1935-44*, 1948. Lewis, London.

Neon Lighting in Hospitals

SIR,—The ever-increasing use of neon strip lighting throughout hospitals has created a danger which I believe is not fully appreciated by those responsible for its installation. In the less up-to-date hospitals not equipped with a recovery unit in the theatre block patients may return to the wards shocked, and often with depressed respiration following chest or upper abdominal surgery, or following the residual effect of muscle relaxants, etc. These cases are anoxic, and, although the obvious case may be given oxygen, the lesser degree of anoxia will be missed by the masking of the mauve colour caused by the neon lighting. I believe that unless some form of ordinary incandescent light be kept on these post-operative cases deaths will occur from prolonged unobserved anoxia.—I am, etc.,

Manchester. WILLIAM B. BACON.

Eclampsia

SIR,—Dr. A. W. Bauer's letter (*Journal*, February, 19, p. 481) on the subject of eclampsia will undoubtedly stimulate both interest and criticism. Early on he dismisses the need to discuss hypotheses, but promptly and naively proceeds to invoke a hypothesis himself. For he states, without proving it, that a mechanism of toxin production exists in eclampsia; urges that the source of this hypothetical toxin should be the goal of our investigations; and attributes its existence to the failure of detoxication of foetal metabolic products. His theme is, however, unacceptable, because the toxaemic process, of which eclampsia can be the climax, occurs even in the absence of a foetus, as in hydatidiform mole and in post-partum eclampsia, whilst the death of the foetus is no safeguard against its supervention—exemplified by the history of cases in which recovery from the toxaemic process had occurred during pregnancy to be followed by fits when labour eventually ensued.

Dietetic measures, successful prophylactically, invariably include severe restriction of salt, a factor which may explain the immunity from the disease enjoyed at certain periods (wartime starvation) and in peculiar climes. I suspect that in no small measure this circumstance underlies Dr. Bauer's successful treatment, in which he stimulates a low salt intake.

Two points he raises in his letter are of much importance and call for confirmation, the statement that at necropsy a typical smell of prussic acid is noticeable on opening the skull of the eclamptic, and the claim of the therapeutic value of intravenous thiosulphate both in eclampsia and pre-eclampsia. In this last connexion it is interesting to note that Lambiotte, Blanchard, and Graff[1] found, remarkably, that the thiosulphate clearances in pregnant women (but not in the non-pregnant) were much higher than those of inulin, the ratio invariably exceeding 1.0 with a range of 1.01 to 2.12. This finding caused them to conclude that thiosulphate was excreted by the tubules during pregnancy only. Some connexion may exist between this response of the tubule to thiosulphate peculiar to the pregnant state and its therapeutic action in toxaemia, and could serve once again to emphasize the role of the kidney in the disease.

Unlike Dr. Bauer, and in consonance with the cardinal principles of our art, I consider that the acme of therapeutics can only be attained by attack on the aetiological factor. Present-day obstetric policy, however, regretfully displays a zeal for treatment that far outweighs its quest for the aetiological solution on which to found it—an attitude, I consider, impeding advance.—I am, etc.,

London, W.1. JOHN SOPHIAN.

REFERENCE

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Kaposi's Varicelliform Eruption

SIR,—Correspondence in connexion with Kaposi's varicelliform eruption has recalled to me an incident which occurred in January, 1949, while I was leprologist in charge of the Church of Scotland Mission scheme for leprosy control and treatment in Southern Ogoja Province, south-east Nigeria. I discovered a case of smallpox in one of the leprosy segregation villages under my care, and, fearing greatly for the consequences of spread of the infection, made arrangements for his strict isolation in a house in the village because no hospital was available. I personally vaccinated 269 possible contacts. Vaccination was by crossed linear scratch technique, a clean, dry dressing being bandaged on and left in position as long as the patient would tolerate it. There were no further cases of smallpox in the village and no cases of Kaposi's varicelliform eruption or accidental vaccinia occurred. There were, however, several cases of acute lepra reaction in those vaccinated. The patient with smallpox was treated with sulphapyridine and made a good recovery.

The efficiency with which complete isolation of the patient with smallpox was carried out may be attributed largely to

the excellent propaganda in preventive medicine initiated by my predecessor and the founder of the scheme, the late Dr. Harry Hastings. Incidentally, this illustrates how the effective control of one prevalent endemic disease may assist in dealing with others. The point of interest following the correspondence above referred to concerns the absence of Kaposi's varicelliform eruption. Drs. A. Girdwood Fergusson and W. A. Dewar (*Journal*, February 5, p. 352) define this condition as "a virus infection . . . arising in patients with a damaged skin," and it is therefore worthy of speculation in this instance whether the covering of the vaccination site was adequate and of sufficient duration (a doubtful point in African patients in that area) to prevent virus contamination of leprosy lesions, or is the skin of the leprosy sufferer an unfavourable soil for the growth of the vaccinia virus? The experience of other workers in this field might be of interest.—I am, etc.,

Glasgow, W.2. JAMES C. P. LOGAN.

Mobile Transfusion Service

SIR,—The life-saving importance of prompt transfusion for severe shock has recently again been stressed by Sir Heneage Ogilvie (*Journal*, January 15, p. 159). The general practitioner cannot be expected as a rule to carry out emergency transfusions at the patient's home, and transport is dangerous in severe shock, especially in cases of internal haemorrhage. A mobile transfusion service is already operating for maternity cases, and, if such a service were made generally available for transfusion of blood, plasma, or "plasma savers" at the patient's home or at the spot of an accident, many lives could be saved and much worry avoided.—I am, etc.,

London, W.1. F. E. LOEWY.

Hyperpyrexia and Anaesthesia

SIR,—I regret that in my attempt to compress my account of this case (*Journal*, December 25, 1954, p. 1526) I omitted the information desired by Dr. J. D. Whitby (*Journal*, February 26, p. 541). Laryngeal stridor was first treated with pure oxygen—a flow of 10 litres per minute was given for 2–3 minutes. As this produced little effect, nitrous oxide 5 litres/minute, oxygen 1½ litres/minute, and trichlorethylene were resumed, and 500 ml./minute of carbon dioxide was added—a concentration of about 7%. This was continued for 2–3 minutes. At the end of this time pure oxygen was given again—10 litres/minute for about one minute, with the expiratory valve fully open and the reservoir bag frequently emptied.—I am, etc.,

Milngavie, Dunbartonshire. R. CECIL BROWN.

Fluoridation of Public Water Supplies

SIR,—Drs. H. M. Sinclair and Dagmar Wilson (*Journal*, January 29, p. 284) do less than justice to the positive benefits of fluoridation as well as to its harmlessness in the dosage proposed. It is misleading to say that "water containing 1 p.p.m. of fluoride decreases the incidence of dental caries in children up to the age of about 8 years" as if there was no protection above this age. American reports on communities with artificially fluoridated water are mostly only available for the first eight years, but Dean *et al.*[1] showed a 60% reduction in dental caries in children of 12–14 years who had lived all their life in a fluoride area. There is, moreover, ample evidence of some effect extending into adult life from Russell and Elvove,[2] Deatherage,[3] and McKay[4] in America, and Forrest *et al.*[5] in this country.

Drs. Sinclair and Wilson correctly draw attention to differences in feeding habits in this country and the U.S.A.; they suggest that our addiction to tea and our greater consumption of fish may cause adults to get a higher dose of fluoride than is desirable or safe. The fluoride content of tea infusions varies greatly both with the brands used and the strength of the brew. A cup of tea of medium strength contains 0.5–1.5 p.p.m. of fluoride in addition to the fluoride content of the water used. If the whole fluid intake were to be as tea, the total concentration would not exceed 1.5–2.5 p.p.m., a concentration which we know from recent studies in America causes no adverse effects on general health. Preliminary investigations in this country have shown that children consume relatively little tea (in any case probably weak and milky). The average consumption of fish in this country is rather less than twice the American rate; in 1951 and 1952 it was less than ¼ lb. (227 g.) a week per person; the 1953–4 figure is likely to be less. Recent analyses of fish purchased in this country gave figures not higher than 1 p.p.m. F for the edible portion, and at this level the average amount of fluoride ingested would be about 0.03 mg. per day. That this figure is essentially correct is shown by the fluoride content of urine of children and adults in this country of 0.3 to 0.6 mg. per day, which agrees with values found in the United States. There is, however, some disagreement about the fluoride content of various kinds of fish, and, though fish is not a major source of fluoride, the content of fish normally consumed here is being checked.

The strongest evidence against such dietary fluoride having any deleterious effect comes from Leone *et al.*[6] in a careful comparison of two areas in Texas, one of which had a water supply with 8 p.p.m., the other 0.4 p.p.m. Samples of the population who had lived at least 25 years in each place were thoroughly examined physically, radiologically, dentally, and pathologically in 1953, following a previous examination in 1943. Except for dental mottling in the fluoridated area, there was no relevant difference between the two groups. Similarly an article by Hagan *et al.*[7] demonstrates no significant difference in the mortality from all causes and from heart disease, cancer, intracranial lesions, nephritis, or cirrhosis of the liver in 64 cities in 16 States, half with a high and half with a low fluoride water supply. The fluoride content of the water in some of these surveys is many times higher than any proposed in this country and well above any additional intake our diet could contribute. Studies in this country have confirmed these facts and other confirmatory studies are being considered.

Drs. Sinclair and Wilson refer to studies in Oxfordshire in which "severe dental fluorosis" was associated with the ingestion of water with fluoride levels of 0.3 and 1.2 p.p.m. This is the only occasion on which a very high degree of mottling of the enamel has been reported and ascribed to fluoride at such levels in a temperate climate. Dean[8] found no more than mild mottling in 1.5% of 400 children aged 12–14 years examined in an area with 1.2 p.p.m. F in the water. Weaver[9] reported slight mottling in 3.6% of the 500 12-year-old children examined in South Shields, where the fluoride level was 1.4 p.p.m. A report by Dean[8] on studies of more than 7,000 children in areas with fluoride levels of 0.1 to 2.6 p.p.m. shows that even moderate mottling only occurs with a level of at least 1.8 p.p.m. F, and severe mottling with at least 2.6 p.p.m. F. Dental examination in areas where the water is fluoride-free often reveals opacities and even brown staining of the enamel very similar to those caused by fluoride. Zimmermann[10] states that "differentiation from fluorosis opacities has occasionally been difficult," and reports that enamel opacities were noted in 36% of the children examined in an area with no fluoride in the water; Hurme[11] reports an even higher incidence. Dean[12] says that differential diagnosis must rule out the hypoplasia due to exanthematous diseases and nutritional disturbances during enamel development.

Drs. Sinclair and Wilson fear the additional hazard of industrial fluorosis. The main hazard of industrial fluorosis is to cattle, due to ingestion of grass, etc., on which fluoride dust has settled. The danger to man is remote. Nevertheless, fluoridation of water supplies would not be carried out in the neighbourhoods where such a situation might arise.

They state that the "level at which storage takes place" is unknown, but there is clear evidence that in fact storage takes place at every level, however small,[13] and that under normal conditions there is a steady rise with age.[14] Experiments (about to be published) which have been undertaken with adults in this country confirm the work of McClure *et al.*[15] in America and show that as much as 95% of ingested fluorine is excreted in the urine, faeces, and sweat—not the lower figure found by Largent,[16] who did not measure fluoride lost by perspiration. There is also evidence that equilibrium with a new level of intake is reached in a few days. In any case there is no evidence that retention of fluoride, when the water supply contains anything of the order of 1 p.p.m. F, causes any toxic effects whatever. Even Largent's subjects remained healthy, and did not show any radiopacity. The relation, if any, between malnutrition and fluorosis cannot be regarded as proved, and even if it were it would not seem to constitute a hazard in Britain to-day. There are few countries where calcium intake is more satisfactory.

Drs. Sinclair and Wilson take up the mission's statement that in theory any fluorine compound which will ionize in aqueous solution should have the same action on teeth, and base their disagreement on the cariostatic effect of stannous fluoride, as

compared with sodium fluoride, although more recent work by Buhler *et al.*[17] showed that the cariostatic effect of stannous fluoride was decreased when the *p*H of the solution was raised from about two to neutrality. Tin is notorious for formation of complex ions, and it is probably true that simple ionization to F ions does not occur in this instance. But no one is proposing to use stannous fluoride, so that even if Sinclair and Wilson were correct their objection would not be a valid one.

We share Sinclair and Wilson's desire for more knowledge. But they have not produced any facts which alter the position taken up by the mission—namely, that there is no scientific evidence that fluorides at concentrations below about 1.5 p.p.m., whether naturally occurring or added to water, have any adverse effects; by contrast, there is indisputable evidence that there is a beneficial effect on teeth.—We, are, etc.,

H. H. STONES. A. M. THOMSON.
J. R. FORREST. J. LONGWELL.

London, W.1.

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17 *J. dent. Res.*, 1954, **33**, 33.

Errors of Diagnosis in Paediatrics

SIR,—In Dr. B. Schlesinger's article (*Journal*, February 12, p. 369) he refers to "the aches and pains of muscular strain and spasm in genu valgum" as being sometimes mistaken for subacute rheumatism. In my capacity as school medical officer attached to the Leeds school orthopaedic clinic for a number of years, I have seen hundreds of children referred on account of genu valgum. In 1953, I examined 151 such children and in 1954, 131, and none of these children complained of pain. Over the same period a number of children who were referred for pains in the legs proved to be suffering from osteochondrosis of the hips (often bilateral) or from osteochondrosis of the conjoined rami of the pelvis, or from an Otto pelvis. Early diagnosis of osteochondrosis of the hip is essential if the restoration of the capital epiphysis and the avoidance of consequent arthritis of the hip in middle life is to be ensured.

When a careful history is taken and the fact is elicited that the child wakes from sleep and complains of pains in the legs, or that he comes in from play and rests because of such pains, then in my experience a cause is much more likely to be found in the hip-joints or in the pelvis than in the knees. I suggest that the diagnosis of genu valgum as a cause of pain in the legs is as dangerous a label as growing pains, and equally likely to mask the true origin of the symptoms.—I am, etc.,

I. HOLORAN.

Leeds.

Spontaneous Regression of Malignant Melanoma

SIR,—Might I add to Dr. V. B. Levison's account of spontaneous regression of a malignant melanoma (*Journal*, February 19, p. 458) by reporting the following case.

In November, 1950, a white South African student aged 22 consulted me because of an enlarged supraclavicular lymph node. He had attended a colleague 18 months previously because of it and had had a chest *x*-ray in April, 1949, which was clear. A provisional diagnosis of tuberculous adenitis had been made. On examination, the supraclavicular node was firm, smooth, egg-shaped, and mobile, suggestive of lymphadenoma. A chest *x*-ray (November, 1950) showed gross enlargement of the right para-tracheal group of lymph nodes. The patient's general health was good. After consultation, he was admitted under Mr. John Gardham to the Hampstead General Hospital and the supraclavicular node was removed for biopsy. It was hard and brown on section. The pathological department of the hospital reported "a secondary deposit from a malignant melanoma. Only the cells at the very periphery of the mass are living where they merge with the fibrous tissue capsule. The firm greyish piece of tissue which is connective tissue contains a small gland which shows several small groups of melanoma cells in the peripheral sinusoids. The nature of the growth suggests the choroid may be the seat of the primary." The other half of the gland was sent independently to the pathological department at University College Hospital, where it was similarly reported upon.

A search for the primary revealed nothing more than a small pigmented area touching the left optic disk at 5 o'clock. I allowed him to finish his M.A. early in the new year and then advised him to return home. I told him he had "sarcoid" (a disease whose prognosis a student cannot easily get from "the books"), but told his level-headed South African fiancée the true diagnosis and its outcome. I arranged to keep in touch with them and with their South African doctor.

To our surprise and quite without treatment the serial radiograms showed the para-tracheal glands gradually diminishing in size, so that by early 1952 the radiograph was normal to all intents and purposes. He has remained well the whole time, has married, and has now a year-old son. I last heard from them, and a family portrait was sent me, in September last year. It is now nearly six years since he was first seen with the enlarged supraclavicular gland.—I am, etc.,

NICOLAS MALLESON.

London, W.C.1.

Tonsillectomy

SIR,—As a G.P. who has anaesthetized for, and seen the results of, both guillotining and dissection, I have been most interested in the recent correspondence.

Regarding premedication, I support the use of atropine alone. All sedatives increase the risk by respiratory depression, and the way to calm children is proper handling. Regarding the type of operation, if Mr. E. H. Miles Foxen (*Journal*, February 12, p. 413) seeks to convince his readers that guillotining is a deplorable procedure, then he must show the courage of his own convictions by declaring outright that no one at all can achieve consistently good results by doing it. My belief is that, with the proper skill and the proper instrument, in the majority of children guillotining is as good as dissection.

There appears to exist the fallacy that, compared with dissection, guillotining demands less skill in surgeon and anaesthetist. Subscribers to this are indeed unlikely to guillotine satisfactorily. The truth is that guillotining demands just as much skill on the part of both, and the penalties of inadequate skill are heavier than in dissection. Moreover, while co-operation between surgeon and anaesthetist is necessary in any operation, in guillotining it is crucial, even literally vital, that the pair understand each other's problems and are practised at working together. Here I would go farther than Mr. Foxen and say that, however practised the pair, it is impossible with the old type guillotine to achieve a perfect result in every case attempted.

The reason is that the requirements of surgeon and anaesthetist conflict, and the limits within which both are satisfied are too narrow for even long practice to succeed every single time. The surgeon requires (1) anaesthesia of sufficient depth and length, without anoxia; and (2) a clear view of the field, and more so as the instrument is liable to slip as the cut is made. The anaesthetist's problems arise from (1) obstruction of the airway by the tonsils; (2) the impossibility of predicting precisely how long the operation will take; (3) the difficulty of altering the depth of anaesthesia once the surgeon has started, which becomes extreme once the first tonsil is removed; and (4) the certainty that when the first tonsil is removed blood will flood the pharynx and some be inhaled. The anaesthetist, acutely aware of the risks of too deep anaesthesia from blood-clot in the trachea and an absent cough reflex, is inclined to keep the patient too light. This gives rise to a vicious circle, since expeditious removal of the second tonsil is made more difficult and the dangerous stage is prolonged, during which time bleeding persists, making the manœuvre more difficult and more dangerous still.

The haemostatic guillotine obviates all these snags. With this instrument the tonsil is gripped by a blunt blade before being cut by the sharp one. After induction of anaesthesia the first tonsil can be gripped and lifted, thus clearing the airway, relieving any anoxia, and allowing depth of anaesthesia to be adjusted to a nicety. The tonsil is then quietly excised and removed, little or no bleeding results, and the second tonsil is tackled in the same unhurried manner.

I should add that I have seen the excellent results of this instrument in the hands of Mr. H. Mower, consultant E.N.T. surgeon at the Royal Infirmary, Gloucester, whose consideration for anaesthetist and theatre staff contributes in no small manner to the success of the operation and makes the work a pleasure.—I am, etc.,

Yorkley, Glos. ROBERT ELLISON.

SIR,—It is very easy to condemn the guillotine from the peace and calm of a teaching hospital, where most of the children's tonsils and adenoids are removed by registrars and house-surgeons. It is quite another matter when one is faced with the harsh realities of a provincial E.N.T. surgeon's life.

A colleague and myself cover between us five sessions a week at a hospital in a neighbouring town. Here we have to keep 19 children's and 15 adults' beds full, and see over 70 new patients, and up to a 100 old patients every week in the out-patient department. A wide variety of cases are dealt with, only major laryngeal surgery and fenestrations being done elsewhere. There is no E.N.T. house-surgeon, and our only help is two general-practitioner clinical assistant sessions a week. No locums are provided for holidays. The waiting-list for children's tonsillectomy is long, but is now slowly improving. Its length is still a great source of worry to the school medical authorities, to the general practitioners, and to many of the parents, and I cannot imagine that they would view any step which would threaten to slow down our progress with anything but alarm. Could Mr. E. H. Miles Foxen (*Journal*, February 12, p. 413), without extra help, manage to dissect all the children's tonsils under these circumstances (which are common in the provinces) without increasing the waiting-list, or would he say that an increase in the waiting-list was of no consequence? At the risk of repeating a dangerous platitude, I would say that the last sentence he quotes from Waugh[1] is nonsense. The complete removal of a tonsil with a guillotine is perfectly possible. The bad results seen were due to the activities of the inexpert with a sharp guillotine. To-day the blunt guillotine is used, and the majority of cases (in this region at least) are done by consultants. A satisfactory result is the rule.

There are several answers to the problems of the children's tonsillectomy waiting-list which would obviate the need for the guillotine. The one that I like best is a letter used at one teaching hospital which says in effect, "Dear Doctor, I quite agree that these tonsils and adenoids should be removed, and I suggest that you arrange this locally." All the other answers require either extra consultants and S.H.M.O.s, which is unlikely to be acceptable to the Ministry, or the moving of junior medical staff out into peripheral hospitals, which would be unpopular with the teaching hospitals. We are left, therefore, with the guillotine—*circa* 1955.—I am, etc.,

Nottingham. J. F. NEIL.

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The Inelegance of Redundancy

SIR,—I am a student begining my clinical work, and have recently realized the often unnecessary use of medical jargon. Before I come to accept it as a necessity, may I object to a fine example in your issue of February 19? In it was an article entiled "Intermittent Positive-pressure Respiration in Bulbo-spinal Poliomyelitis: Use of the Radcliffe Respiration Pump." Respiration is by nature intermittent; why say so? To a person who does not realize that the iron lung works by a negative pressure, the phrase "positive-pressure respiration" is without significance. I submit that the title could have been "Experience with the Radcliffe Respiration Pump in Bulbo-spinal Poliomyelitis" without any loss of precision and with a gain in clarity, brevity, and elegance.

Secondly, too often authors omit those few sentences in a general introduction that would greatly assist the non-specialist reader. In this case the distinction between "positive pressure respiration" and "negative pressure respiration," and between an iron lung and a respiratory pump, should have been made clear at once. Specialists are too apt to refer us for such explanations to a paper that we have neither the opportunity nor the time to read.—I am, etc.,

London, N.W.8. M. W. HASLETT.

Topical Hydrocortisone

SIR,—Dr. Ronald Church's excellent article (*Journal*, February 26, p. 517) on the use of hydrocortisone ointment and your annotation (p. 530) raise certain serious difficulties under the present conditions of medicine in this country. My experience with local hydrocortisone has been essentially similar to his, though I have been more successful in ano-genital pruritus and less so in nummular eczema; also I have had cases which have responded to the stronger ointment and not to the weaker one.

The difficulty is, however, that hydrocortisone is a suppressive and not a curative agent, and directly it is stopped the patient relapses unless the underlying predisposing factor is removed in the meantime. Unfortunately, this cannot be done with many cases of constitutional eczema, and so the patient may demand to continue with his hydrocortisone ointment for months or even years. Hydrocortisone ointment costs 69s. an ounce (31 g.) for 2½% or 29s. for 1%, and, assuming an extensive case of eczema requires 2 ounces (62 g.) of ointment a day, this would be a prohibitive cost for routine treatment in a non-fatal disease; and yet if hydrocortisone ointment were freely available it would certainly be used extensively, often in ignorance of its cost. I would suggest the following general indications for the use of hydrocortisone ointment: (1) as a temporary measure in a patient suffering great distress from an acute condition such as a severe exogenic dermatitis; (2) as a temporary measure to bring under control an intractable eczematous dermatitis which has previously failed to respond to more orthodox treatment; (3) as a more prolonged form of treatment for skin lesions of small areas—such as pruritus ani—when this has been found to be the most helpful therapy. There may occasionally be some other indications, but these will serve as a guide to the reasonable use of hydrocortisone without its becoming an intolerable burden on the National Health Service.—I am, etc.,

Leeds, 2. F. F. HELLIER.

Disk Lesions and Low Backache

SIR,—It is with considerable diffidence that I intrude into a discussion by experts on a subject without my province. I think, however, that there is a small but useful point to add to the effectiveness of the valuable exercise described by Mr. W. Grant Waugh (*Journal*, February 12, p. 412). I have also an experience to relate which may have some bearing on the puzzling aetiology of disk lesions.

Leather straps similar to those used in buses so that the hand can be passed through the loop makes the exercise less of a feat of endurance and allows it to be carried out for longer periods. A slight dropping jerk is also feasible which seems to be an important additional manœuvre. Certainly dramatic relief can be obtained in this way, as Mr. Grant Waugh has said. Indeed, I sometimes wonder if it would not be a good thing for us all to erect a cross-bar in our back gardens to indulge in this atavism and thus counter our tendency to spinal shortening in these days of delible disks.

Some years ago a colleague and myself were asked by a worried timber merchant to investigate the growing incidence of disk lesions among his employees. He said his firm had been unloading timber in exactly the same way for over 50 years, but it was not until after the war that the disability appeared. Accordingly we spent a day at the canal side watching unloading. Here they used the method of stacking the planks on end. A 24-ft. (7.3-m.) plank was positioned so that the man's shoulder was at the fulcrum. Then by long practice in balance and rhythm the plank was carried from the barge to the storehouse. On nearing the storehouse the man started a jog trot, increasing his speed until with spine flexed he rammed the forward end of the plank into the angle between the ground and a roof support, thus running the plank into an upright position by one continuous movement. Clearly, as a method of producing a disk protrusion or arthritis this could hardly be bettered, but there still remained the all-important question of the post-war incidence. We therefore interviewed all the men and collected the data which might constitute a significant environmental influence. Most of the men who had incurred the disability had been in the Services. The only obvious contrasting feature we could find in the pre- and post-war periods was diet. Pre-war, two meat meals had been the rule, and in addition a ham or bacon breakfast. There was in fact an appreciable difference in the amount of first-class protein consumed, and one of the older employees told us that they could never manage the longer pre-war working hours on the present diet (that is about five years ago).

No doubt the matter of deficiency in essential amino-acids and other dietetic factors has been fully investigated and discarded as a possible cause, but this story may have some other aspect of interest to someone working on this subject.—I am, etc.,

Ilford, Essex. D. LANG STEVENSON.

SIR,—Recent correspondence on backache has been most controversial and thereby intriguing. Does this not show that no one specialty is infallible, and that team work is essential? All of us are doctors, and very many of us have had "backache," but very few indeed have had "disks," and fewer still have been operated upon.

The differential diagnosis of backache is very difficult, and its treatment still more so. It therefore behoves us as consultants to work together as a team in its elucidation, and, if orthopaedic in origin, to carry out the treatment in detail *personally*. Moreover, it is our duty as doctors to impress upon the public that they must face up to the fact that wear and tear of the spinal column must bring its ills with it: the majority of which are curable by non-surgical means. —I am, etc.,

London, W.1. B. WHITCHURCH HOWELL.

SIR,—As another general practitioner I gladly take up the challenge of Dr. R. N. R. Grant (*Journal*, February 19, p. 480), since I for one have never been satisfied that "fibrositis" is caused by exposure to draught. If the history is studied, a trauma will usually be traced. Thus the man who "always has a stiff neck after a hair-cut" will blame the cold sensation of the clippers or of the denudation itself, forgetting the extreme flexion into which his neck was forced by the operator. Likewise the railway traveller who returns with a "chill in the back" will admit to falling asleep whilst sitting upright in the railway carriage. The holiday-maker who has "caught lumbago on a windy beach" will have been flattening his lumbar curve either in a deck-chair or upon sand not so much wettened as hardened by a recent tide.

It is moreover idle to argue that the pain did not appear until the following day. If it is true that the disks as a whole can imbibe fluid under traction-treatment sufficiently to increase the measured height of the patient, then surely recumbency is the very position in which a damaged disk can best swell overnight ready to declare itself by a sudden shift of internal tension when first the victim bends forward on the morrow.—I am, etc.,

Richmond, Surrey. JOHN DANCY.

SIR,—As a high-spirited youngster skylarking in the Edinburgh Warrender Park Baths in attempting a high dive I felt I was going to hit the bottom, but by doing a quick turn in the air this I avoided. However, I felt I had "ricked" my back, and for two years I had lumbago, as we called it 47 years ago. I had some treatment for what my surgeon called a fractured articular process. I did exercises regularly. Three years later I began to play golf and even tennis. I did not risk rugger—I became a scratch golfer instead.

During the first world war and for years afterwards I had about 15 attacks of acute lumbago. During the war I observed that nearly all the soldiers wore elastic or broadish webbing belts which they said prevented their backache. In 1918 I started to wear a belt and this helped me greatly. Acute lumbago I cured with hot baths and passive movements in the hot bath. The belt relieved the ordinary back pain and I could golf, shoot, and enjoy dancing. In 1951 I had a severe motor accident, and in 1952 I was ill for 18 months and my back returned. In spite of expert orthopaedic treatment, rest, massage, and spa treatment, I was no better. However, it was suggested that I might have some spinal arthritis, and I had a course of deep *x* ray, and this cured the acute pain. I was greatly relieved, but the growling low back pain persisted.

Reading in the *Fishing Gazette*, April 17, 1954, an article by Ronald Strong, who had a slipped disk, and who could now fish for six hours, even after five years of torment and endless examinations and treatment, I took his advice and had a modified surgical belt made with lumbar and some anterior support. Now for one year I have had practically no pain. I can walk two miles and more, with great benefit to my general health. I am 68 years old and I hope to fish again this spring. On my advice many golfers now wear a firm belt with great benefit. A belt modified and fitted to the patient is the cure for lumbago and low backache. I sleep with a firm belt round my waist. Backache can usually be traced to an injury if a careful history of the patient's story is recorded.—I am, etc.,

Bradford. DONALD WATSON.

Protein Value of Milk

SIR,—A recent letter (*Journal*, February 12, p. 416) from Mr. R. H. Woodcock, under the title of "Human Nutrition and the Sophistication of Foods and Feeding Habits," is based on a complete misconception and requires correction. Mr. Woodcock stated that the fall in the nutritive value of milk on evaporation or drying and subsequent storage was insignificant, because authors whom he quoted had found insignificant *losses* of lysine (the amino-acid most liable to damage) in these materials. These estimations of lysine were carried out microbiologically *after* acid hydrolysis of the proteins. It is well known that in the Maillard reaction, which takes place during the heating or prolonged storage of protein-sugar mixtures, part of the lysine becomes bound to the sugar and cannot be liberated during digestion. Most of it is still present, as indicated by analysis following acid hydrolysis, but it is not available to the consumer. The nutritive value is therefore correspondingly reduced. Chemical or microbiological analyses of proteins carried out after acid hydrolysis may therefore yield no information as to the nutritive value of a protein.

Mr. Woodcock would have done better, instead of quoting references to American chemical work on this subject, to have noted the biological experiments carried out so thoroughly at the National Institute for Research in Dairying, at Shinfield.[1-4] Among other results, this work showed that the biological value of the proteins of dried skim milk (as measured on young rats) fell from 89 to 66 on storage

at 37° C. for sixty days. Storage at room temperature under conditions which did not exclude atmospheric moisture resulted in a fall from 89 (18 months after manufacture) to 71 three years later.

I may add that I am fully aware that, under normal conditions of feeding, the reductions in biological value likely to be encountered are not important in view of the large quantities of protein being consumed. In this letter I am merely concerned with correcting the scientific inaecuracy.—I am, etc.,

London, E.C.1. A. E. BENDER,
Research Department, Bovril Ltd.

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1 Henry, K. M., and Kon, S. K., *Biochem. J.*, 1945, **39**, xxvi.
2 —— —— *J. Dairy Res.*, 1949, **16**, 53.
3 —— —— ibid., 1952, **19**, 216.
4 —— —— and Rowland, S. J., ibid., 1946, **14**, 403.

Whither Natural Childbirth?

SIR,—I am very pleased indeed to see the excellent letter of Dr. Constance L. Beynon (*Journal*, February 19, p. 475). Now as so few "family doctors" (if such persons still exist) do any midwifery, normal or otherwise, it is important that the clinics do not run amok. As Dr. Beynon suggests, their army of physiotherapists and other departmental specialists with great schemes for training for "natural childbirth" may defeat their own object by creating apprehension and fear by introspective thought in a perfectly normal and healthy expectant mother.

During more than 25 years of general practice, before retiring at the approach of the N.H.S., my chief interest was obstetrics. I have seen babies delivered in many parts of the world; in world-renowned teaching hospitals and elsewhere. In some I have been horrified at the extremely artificial and pseudo-scientific methods employed, even in normal cases—sometimes with disastrous results. I have seen methods of investigation during pregnancy which might have acquired a Ph.D. for some enthusiastic house-surgeon, but which appeared to me to be entirely unjustified and not likely to benefit in any way the trusting individual being investigated. I would not have allowed some of these experiments to have been carried out on any member of my own family, and therefore I could not acquiesce had they been my patients.

Forty years ago—in my student days—we were taught by brilliant experts how and when to interfere in difficult labour. Later came the preaching against "meddlesome midwifery" which was the cause of many a case being left too long for safe delivery. Since then antenatal supervision has proved its worth. In the clinic there is a multitude of specialists and their minions to bewilder the healthy woman: an ever-changing personnel.

The large number of persons concerned with each pregnancy and confinement is in itself a disadvantage and repugnant to the woman they seek to serve. The methods of Dr. Grantly Dick Read appeared to me to be rational and helped many toward "natural childbirth," but how could his methods be practised under to-day's conditions? The old family-doctor–obstetrician is unfortunately dying out, and apart from the appointment of a few expert surgeons to be called upon in a small minority of cases, I fear, has not been adequately replaced. Let us think again. A most happy caption has been selected for Dr. Beynon's letter, "Whither Natural Childbirth"?—I am, etc.,

Bournemouth. S. H. WADDY.

Sézary's Syndrome

SIR,—In addition to the seven cases of Sézary's erythrodermia described by Drs. W. E. Alderson, George I. Barrow, and Robert L. Turner (*Journal*, January 29, p. 256) in their interesting paper, we have recorded a further case in a woman of 84.[1] This case may throw light on the nature of the condition, since it is the first to come to post-mortem examination, the histological findings of which are being studied.

So far there is no evidence that the reticulum cell infiltration of the skin and the presence of these cells in the peripheral blood is a malignant process. Alderson *et al.* state their belief that it is an early phase of a malignant reticulosis linking the conditions known as lipomelanic reticulosis and reticulum cell reticulosis. The term reticulosis is a natural pathological extension of Aschoff's physiological concept. Unfortunately, the limits of its application are even more vague than those of the reticulo-endothelial system from which it derives. We should, however, be able to confine "malignant reticulosis" within closer boundaries and reserve that term for invasive and irreversible proliferation of reticulo-endothelial cells. In Sézary's erythrodermia there is as yet no evidence that the changes are malignant.

The lipomelanic change in superficial lymph glands is now generally considered to be a reactive hyperplasia. It has been described in association with such benign conditions as varicose ulcer[2] and lichen planus.[3] The histological changes are reversible and if the skin condition clears the glandular enlargement subsides. We feel that the term lipomelanic reticulosis should be abandoned and prefer the non-specific lipomelanic lymphadenopathy.—We are, etc.,

J. FIELDING.
London, W.9. HAROLD WILSON.

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1 *Proc. roy. Soc. Med.*, 1954, **47**, 404.
2 Liapply, T. C., *Arch. intern. Med.*, 1948, **81**, 19.
3 Obermayer, M. E., and Fox, E. T., *Arch. Derm. Syph. (Chicago)*, 1949, **60**, 609.

Press Publicity

SIR,—In regard to this matter of our profession, organs of the Press, and operations on conjoined twins an apposite remark was made on a related subject on March 1 in Parliament by Sir Winston Churchill. He said: "I think the liberty of the individual must be sustained against the tyrant, it must be sustained against the mass, and it must be sustained against the machine."

We stand for the liberty of the patient to keep his disease and treatment private and for the liberty of the surgeon to preserve his modesty. The organs of the press with which we are concerned stand for giving the mass what it wants. The mass, in its day, wanted gladiatorial games, it crowds round street accidents, and it wants the details of the operating theatre.

If we believe in the principles of the Hippocratic oath we should sustain the patient and the surgeon against the mass and the machine that ministers to it. This is no matter of professional etiquette; it is a matter of values. "Prepared statements" are no solution. I would urge that if we compromise we put our profession's soul in jeopardy.—I am, etc.,

London, N.W.3. LINDSEY W. BATTEN.

Cosmetic Materials

SIR,—I am at present engaged in a revision of my book, *Cosmetic Materials: Their Origin, Characteristics, Uses, and Dermatological Action*, the foreword to which is being contributed by a Harley Street dermatologist. In the interests of the industry, the user, and the medical profession, I am anxious to obtain as much information as possible concerning primary irritation or sensitization arising from the use of substances employed in the cosmetic, toilet, and pharmaceutical industries, and for this purpose I would be very glad to receive brief details from any of your British or overseas readers of any instances in which the offending ingredients have been definitely confirmed by skin tests.

Such information should be sent to the address given at the foot of this letter; it will be personally acknowledged and full credit given to the source of the information in the new edition.—I am, etc.,

60, Broad Walk, Heston, Middlesex. RALPH G. HARRY.

Medico-Legal

DEATH FROM BENZENE POISONING

[FROM OUR MEDICO-LEGAL CORRESPONDENT]

At the inquest held recently at the St. Pancras Coroner's Court on Dennis William Wood the cause of death was found to be aplastic anaemia due to benzene poisoning, and a verdict of death from natural causes was recorded by the coroner, Dr. W. Bentley-Purchase.

Mr. Wood, aged 22, was a student industrial chemist and had started work at the Portsmouth Electricity Works in 1948. In September, 1953, he fell ill, and was an in-patient at the Royal London Homoeopathic Hospital from May 12 to August 19, 1954, with anaemia, being then discharged improved. He was readmitted in October and November, 1954, for blood transfusions, but died on December 25, 1954, in hospital. He had suffered from a lack of leucocytes and platelets, the platelet count being proportionately lower than the white cell count. Dr. R. Moore, consultant physician to St. Mary's Hospital, Portsmouth, suspected benzene poisoning with entry through the skin, because the anaemia was hypoplastic. Dr. Ethel Browning, Medical Inspector of Factories, agreed that the condition was due to benzene poisoning.

Witnesses from the Portsmouth Generating Station with whom Mr. Wood had worked said that he was employed on general laboratory work. This included performing standard water-and-oil tests with benzene as a solvent, so that he would come into contact with benzene vapour. He would be working with benzene for about 1½ hours per week though not necessarily every week, and he would not get it on his hands or inhale it. The work was not considered dangerous, and the four others doing the same work had been unaffected. Mr. Wood did not work in the fume cupboard.

Dr. Browning said that it was not unusual for such a small exposure to benzene to cause anaemia. Individual susceptibility varied, and it was inhalation which usually caused the trouble.

BROKEN NEEDLE IN GIRL'S THROAT

The emergency which faced a surgeon when a needle broke in his patient's throat and then an electric lamp failed, plunging the operating theatre into darkness, was the subject of a case before Lord Guthrie in the Court of Session, Edinburgh, on March 4. He awarded £850 damages to a Dundee man on behalf of his 14-year-old daughter. The girl, it was stated, received severe scarring of the throat as a result of efforts to find the broken part of the needle after an operation for the removal of her tonsils and adenoids.

James Henderson, of Dundee, claimed on behalf of his daughter Marion £5,000 damages from Mr. G. I. Henderson, surgeon, formerly of Dundee and now practising in Australia, where his evidence was taken.

Lord Guthrie said the action arose out of an operation in Maryfield Hospital, Dundee, on March 21, 1951. (Three weeks before the operation the defendant had arranged to go to Australia, and he left in May, 1951.) At the end of the operation severe bleeding occurred, and the surgeon, by stitching, took measures to control this. While doing so, the needle broke, and two-thirds of it, about ½ in. (12 mm.) in length, remained in the child's throat. A stitch was inserted with a fresh needle, and the bleeding was brought under control. At that point the bulb in the headlamp used by the surgeon failed, plunging the theatre into almost total darkness. Replacement of the bulb took only a few seconds, and continuous anaesthesia by gas was administered to the patient while the broken needle was sought. Lord Guthrie said that the surgeon probed the soft palate with his finger and the blunt end of the forceps. After about 15 minutes he thought he felt the needle and made an incision with a scalpel. The needle was not found and a stitch was inserted in the incision. The search lasted unsuccessfully for an hour. Next day the child was transferred to Dundee Royal Infirmary. A powerful electromagnet was placed close to her mouth and the missing part of the needle was withdrawn.

Lord Guthrie described the girl's voice as weak, hollow, and nasal, and said that she spoke like a person with a cleft palate. He said he accepted the medical evidence for the plaintiff as to proper surgical procedure in the circumstances. Defendant had departed from that standard. It should have occurred to the surgeon that prolonged probing and stretching of the fibres would have serious and possibly permanent consequences. Had he exercised the care and skill reasonably to be expected of a surgeon, after a few minutes he would have desisted from his blind search. Lord Guthrie concluded by saying that it was right to place on record that in the course of the evidence tribute was paid to the meticulous care which characterized the surgeon's normal conduct of operations.

Obituary

DR. ADELINE ROBERTS, who died in a London hospital on January 8 in her 82nd year, was for many years distinguished among London medical women, particularly in the fields of public and social work. Adeline Mary Roberts, who was born in 1873, entered the London (Royal Free Hospital) School of Medicine for Women as a medical student in 1893. She took the London M.B. in 1898, the B.S. with honours in the following year, when it could be taken as a separate examination, and proceeded to the M.D. in 1902. After qualification she held a number of resident and other appointments, and then acted as a clinical assistant at Moorfields Hospital for several years before setting up as an ophthalmic consultant in London about 1904. Later, she was appointed consulting ophthalmic surgeon to the South London Hospital for Women. Always interested in social medicine, she was elected a member of the St. Marylebone borough council in 1912, and for some years was the only woman on the council, where she had considerable influence in matters concerning the health of women and children. When war broke out in 1914 Dr. Roberts became increasingly active, and her opportunity to undertake more systematic work came with the formation of the Women's (later Queen Mary's) Army Auxiliary Corps in 1917, when for the first time the organized help of women, chiefly for clerical and domestic duties, was made available as an accessory to the Regular Army in wartime. To provide certain medical services in connexion with this corps a small unit of medical women was formed, being attached to the R.A.M.C. and represented at the War Office by a controller of medical services of the W.A.A.C., a post Dr. Roberts held after serving in this unit for two years, first as president of the London recruiting and medical boards.

For her valuable work in connexion with the war she was appointed an O.B.E. of the Military Division in 1919. Dr. Roberts was elected to the London County Council as a representative of St. Marylebone in 1922, when she gave up medical practice and rendered unstinted service to the council until her retirement 12 years later. She was chairman of the mental hospitals committee of the council, in which she took a keen interest, and her good work as chairman of the committee during the reorganization and development of the Maudsley Hospital was widely recognized at the time. After her retirement from the L.C.C. Dr. Roberts continued to do a good deal of public work as a magistrate and for various voluntary societies, including the Invalid Children's Aid Association. She remained in London during the second world war, but increasing ill-health prevented her, to her great regret, from taking part

in any active medical or social work. Dr. Roberts, who made a worthy contribution to the work done by medical women during the first half of the century, had a clear mind, good judgment, courage, and a high sense of responsibility. As a friend, her wide experience, quiet humour, and personal charm made her a delightful companion, though to many people who did not know her well she undoubtedly presented a somewhat formidable figure. She was unquestionably an outstanding person of exceptional character and attainments, and she leaves a record of good work finely done.—J. H. T.

A memorial service for Sir CHARLES MARTIN will be held in the Chapel of St. John's College, Cambridge, on Saturday, March 12, at 12 noon.

Medical Notes in Parliament

Merit Awards

Mr. BERESFORD CRADDOCK (Spelthorne, Con.) on February 28 asked the Minister of Health on what basis the distinction (merit) award was given to consultants in the Health Service over and above their salaries; and why the identity of the doctors granted these awards from public funds was not published. Mr. IAIN MACLEOD replied that the committee set up to recommend awards was required by its terms of reference to base its recommendations on professional distinction. In his view publication of names would not be in the best interests of the Health Service. Mr. CRADDOCK asked what objection there was to publishing the names, as the grants were paid from public funds. Mr. MACLEOD said the objection surely was that, if it were known which consultants got class A, B, or C awards, patients might think they were getting different forms of treatment. That would not be the case, because factors other than clinical ability were taken into account. The same view had always been taken by his predecessors, and he believed it to be right.

Mr. BERESFORD CRADDOCK also asked the Minister whether he was aware that doctors of the highest distinction in the employ of the Medical Research Council were not eligible for distinction (merit) awards in the same way as consultants in the Health Service; and whether he would provide for such, or similar, grants to be made, in order to remove this anomaly. Mr. MACLEOD replied that, subject to certain rules, doctors employed by the Medical Research Council were eligible for distinction awards if they held honorary consultant appointments in the Health Service. Apart from this, their remuneration was a matter for the Lord President of the Council.

Medicine in the Colonies

Mr. JAMES JOHNSON (Rugby, Lab.) asked the Minister of Health on February 28 whether, in view of the growing numbers of unemployed among British doctors, he would consult with the Secretary of State for the Colonies about their being engaged in the service of Colonial governments. Mr. MACLEOD said that the Colonial Secretary and he already consulted as necessary on the needs of the Colonial governments for medical staff, and vacancies were publicly advertised in all appropriate cases. Mr. JOHNSON said there were 200 applications for each vacant job to-day in the United Kingdom. In Nigeria there were some 61,000 people per doctor and in the Cameroons 71,000. He asked the Minister to ginger things up, and set up a working party to investigate the question of seconding doctors to the Colonies, particularly West Africa. Mr. MACLEOD replied that it was not within his competence to direct doctors to any particular area. Mr. JOHNSON said that people in the Colonies thought the present scheme was not working. He wished the Minister to consider some financial inducement, perhaps a settlement scheme, to induce doctors to go to the Colonies. Mr. MACLEOD said the problem was largely one for the Colonial Secretary, and he would bring the suggestion to his notice.

Salary Scales

Mr. H. W. BOWDEN (Leicester, South-west, Lab.) asked the Minister of Health what steps he had taken to satisfy himself that the present salary scales were sufficiently attractive to encourage young doctors to enter hospital service rather than enter general practice. Mr. IAIN MACLEOD replied that the salaries of hospital medical staff were a matter for the Medical Whitley Council in the first instance; but he knew that the need to keep a proper balance in recruitment was an important factor in the agreement on increased salaries reached by the council a year ago. Mr. BOWDEN asked if Mr. MACLEOD was aware of the difficulties experienced by many hospitals in the provinces in obtaining junior medical staff. Mr. MACLEOD said that indeed he was. It would be a mistake, however, to link those difficulties entirely with problems of pay. In many cases they arose because the hospitals were remote or unattractive. As for pay, the agreement last year did a good deal to restore the balance that was upset by the Danckwerts award. Mr. J. SNOW (Lichfield and Tamworth, Lab.) said it would be a great pity if the provision of practitioners for the countryside was in any way jeopardized. There were still many rural areas under-doctored.

Manpower Inquiry

Mr. A. BLENKINSOP (Newcastle-upon-Tyne, East, Lab.) asked if the Minister was satisfied that there was sufficient non-professional representation on the committee to inquire into medical manpower. Mr. MACLEOD said that the Secretary of State for Scotland and he were satisfied that the composition of the committee was well adapted to the work before it.

Mr. R. GOWER (Barry, Con.) complained that the medical manpower committee contained no members who had been associated with health administration in Wales, although Scotland had three and England eight. Mr. MACLEOD said the members had been appointed solely on their personal qualifications, and not as representatives of particular areas or interests. The interests of the Welsh health services, which through the Welsh Board of Health were his direct responsibility, would not be prejudiced in any way.

Dispensing Equivalents

Dr. BARNET STROSS (Stoke-on-Trent, Central, Lab.) asked the Minister of Health on February 28 whether he had noted that exactly similar preparations of some drugs, particularly penicillin, were manufactured by different chemical firms and stocked by dispensing chemists; that these preparations had different names; and whether he would authorize dispensing chemists to dispense an exact equivalent, irrespective of the name on the prescription. Miss PAT HORNSBY-SMITH, Parliamentary Secretary, replied that the Minister was aware of the position, but he would not feel justified in authorizing chemists to dispense preparations other than those prescribed. The matter was primarily one for the prescriber. Dr. STROSS said there were four or five oral and stable suspensions of penicillin that were exactly alike and identical in therapeutic effects. He suggested that a child suffering from pneumonia might not get anything to help it for a day and/or a night, although a similar preparation was available. He wondered what ought to be done in such a case. Miss HORNSBY-SMITH said that it would be quite unethical for a chemist to transpose one preparation for another that was ordered by a doctor. In a case of that kind there was no reason why the chemist should not telephone the doctor and ask whether he would agree to change to the comparable preparation.

Coroners' Verdicts

Mr. JAMES GRIFFITHS (Llanelly, Lab.) asked the Minister of Pensions and National Insurance if he was aware of the

concern that was felt in South Wales at the increasing number of cases in which coroners' courts had found that the death of coal-miners was due to, or accelerated by, silicosis or pneumoconiosis and in which the medical boards made contrary decisions; and whether he would consider the setting up of a competent body to investigate and report on the criteria used by the boards in arriving at their decisions. Mr. OSBERT PEAKE, replying on February 28, said he was aware that for some time concern had been felt in South Wales on this matter. He had had discussions with the Home Secretary and his predecessor about it. A circular was issued to coroners in October, 1954, drawing attention to the importance of employing experienced pathologists in cases of this kind.

Mr. GRIFFITHS said the disparity was continuing and causing widespread concern. Would the Minister consult his medical advisers about a closer examination of the problem? Mr. PEAKE pointed out that coroners were independent judicial officers, and there was great difficulty in arriving at a solution. Mr. GRIFFITHS said that a verdict that death was caused by pneumoconiosis or silicosis, after a report by a pathologist, caused much doubt about the decisions of the medical board. Was it not essential that there should be an inquiry, to maintain confidence in the boards? Mr. PEAKE said his information was that in most cases where difficulty had arisen the post-mortem examination had been conducted by a general practitioner. Therefore he thought it would be wiser to see whether the circular had any effect before considering further action.

Effects of Dust Suppression

Mr. GRIFFITHS asked the Minister of Fuel and Power if he would make a statement on the progress made in combating silicosis and pneumoconiosis among coal-miners; to what extent the measures taken were proving adequate; and what further measures were contemplated.

Mr. L. W. JOYNSON-HICKS, the Parliamentary Secretary, stated on February 28 that in South Wales, where full-scale dust suppression first started, the total number of new cases in 1953 was 1,069, compared with 3,774 in 1949. Corresponding figures for the whole country were 4,048 in 1953 and 5,807 in 1949. He was advised that the National Coal Board was making substantial progress with its dust suppression programme, and further investigation was constantly proceeding, under the Board's "twenty-pit" scheme and other types of research.

Genetic Effects of Radioactivity

Mr. F. BESWICK (Uxbridge, Lab.) asked the Parliamentary Secretary to the Ministry of Works, as representing the Lord President of the Council, what steps he had taken to satisfy himself that there was adequate research into the genetic effects of radioactivity; and if, in view of the serious issues involved, he would make a statement.

Mr. J. R. BEVINS replied on March 1 that a programme of research into the genetic effects of radioactivity was in progress under the auspices of the Medical Research Council, and plans were being made to expand and accelerate it. There was frequent consultation with workers engaged in cognate studies in the United States, and the researches in this country were planned to avoid overlapping with the American investigations.

Blindness in West Africa

Mr. A. LENNOX-BOYD, Secretary of State for the Colonies, informed Mr. C. ALPORT (Colchester, Con.) on March 2 that entomological research undertaken by the British Empire Society for the Blind in the Volta region, as part of their West African survey, was nearing completion. This was expected to lead to recommendations for insecticidal campaigns in inhabited areas of the Upper Volta along the tributary and subsidiary streams, where the incidence of river blindness was higher than along the Volta itself. As regards the Lower Volta, the special measures that might be required if it was decided to embark on the Volta River hydro-electric project had been studied by the preparatory commission for the project, and would be included in its report. Meanwhile, substantial progress was being made by Government medical field units in the treatment of sufferers.

Palestinian Refugees

Lord JOHN HOPE, Under Secretary, Foreign Office, replying to Mr. PATRICK MAITLAND (Lanark, Con.), stated on March 2 that Palestinian refugees suffering from infectious tuberculosis were segregated and cared for in local government hospitals in Gaza and the Lebanon, in the new Government sanatorium in Amman, and in a missionary tuberculosis hospital on the West Bank. Next month the United Nations Relief and Works Agency would open a further 100-bed tuberculosis hospital in Jordan especially for refugees. Mr. Maitland said that more than 4,000 refugees had been living for more than five years in one camp near Jericho, and there were no arrangements whatever for segregation in the camp. The arrangements the Under Secretary had described were utterly inadequate. The Government, having contributed large sums to the Agency for many years, should voice this major scandal. Lord JOHN HOPE said that things might not be perfect, but the Agency was working on the advice of a public health specialist in tuberculosis from the World Health Organization. He was assured that there was no special danger to public health.

Lord JOHN HOPE informed Mr. CROUCH (Dorset, North, Con.) that the number of Palestinian refugees per doctor in the U.N. Relief and Works Agency camps was 3,556.

Recruitment for the Colonies

Mr. F. BROCKWAY (Eton and Slough, Lab.) on March 7 asked the Minister of Health if he would request the committee on medical manpower to consider the question of recruitment in relation to Colonial needs as well as to the needs of the United Kingdom. Mr. IAIN MACLEOD said that the committee's terms of reference covered all branches of the profession, and it would therefore take account of doctors who went overseas as well as those who remained in this country. Mr. BROCKWAY asked whether, in view of the great urgency for doctors in the Colonies, the Minister would consult with the Secretary of State with a view to seeing that there were openings for both British citizens and Colonial subjects to enter medical schools for this purpose. Mr. MACLEOD said that he was in touch with the Colonial Secretary. The manpower committee would be concerned only with medical training in this country, but they must take into account where qualified doctors might go from the universities, and that included the Colonies.

Mercury Teething Powders

Mr. S. SWINGLER (Newcastle-under-Lyme, Lab.) asked the Minister of Health on March 7 if he had considered the recent case of a baby's death from mercury poisoning,[1] and what action he would take concerning the supply of tablets containing mercury to infants. Miss PAT HORNSBY-SMITH said that, while the Minister was advised that mercurial preparations had a proper place in medical treatment, his medical officers had already suggested to medical officers of health that powders containing mercury should be issued from child welfare clinics only on medical advice and with precise instructions. He would consider further whether to suggest that these preparations should cease to be available at clinics at all. Mr. SWINGLER suggested that the Minister's medical advisers might issue a general warning to the public, in view of the concern created by a recent inquest. Miss HORNSBY-SMITH said she thought that the general publicity and the advice given by medical officers of health made this

[1] *British Medical Journal*, March 5, p. 610.

clear, but even if the powders were not given at clinics it would not interfere with the right of a doctor to prescribe a preparation in which this was included.

Charge for Certificates

Mr. V. COLLINS (Shoreditch and Finsbury, Lab.) on March 7 asked the Minister of Health if he was aware that many doctors charged 2s. for medical certificates issued to Health Service patients, and if he would make a regulation to prohibit this charge. Miss PAT HORNSBY-SMITH, Parliamentary Secretary, replied that general practitioners in the Health Service were not required to provide free medical certificates other than those required under the National Insurance Acts and certain other enactments which are set out in Regulations. The Minister saw no reason for altering this system. Mr. COLLINS said that often these certificates had to be paid for after a period of unemployment. If the per capita charge did not cover them, could it be adjusted so that the certificates could be issued free? Miss HORNSBY-SMITH said that certificates required to obtain benefit under any of the regulations were obtainable free, but other types of certificate were not.

Opticians' Registration

Miss PAT HORNSBY-SMITH informed Mr. A. BLENKINSOP (Newcastle-upon-Tyne, East, Lab.) on March 7 that the Government could hold out no hope of introducing legislation for the registration of ophthalmic and dispensing opticians at present. She said that the difficulty was with the Parliamentary time-table.

Mental Nursing.—There is still a shortage of mental nurses, which has been estimated at about 10,000.

Lost in Hospital.—In the three years 1951–2 to 1953–4 the value of articles recorded as lost in Scottish hospitals was respectively £18,479, £25,933, and £16,068.

Fluoridation Tests.—Experiments in the fluoridation of water are to start in Anglesey, Darlington, and Watford during the summer. Special equipment has to be provided, and the local authorities are now inviting tenders.

The Services

Major-General F. J. O'Meara, late R.A.M.C., has been appointed Honorary Physician to the Queen, in succession to Brigadier R. J. Rosie, C.B.E., retired.

Colonel C. M. Marsden, late R.A.M.C., has been appointed Honorary Surgeon to the Queen, in succession to Major-General J. C. Collins, C.B., C.B.E., retired.

Colonel J. B. S. Guy, C.B.E., T.D., R.A.M.C., T.A., has been appointed Honorary Colonel of a T.A. Unit, in succession to Colonel P. Hickey, T.D., R.A.M.C., T.A., whose tenure has expired.

A *Supplement* to the *London Gazette* has announced the following awards:

Third Clasp to the Territorial Efficiency Decoration.—Major (Honorary Lieutenant-Colonel) T. C. McKenzie, T.D., R.A.M.C., retired.

Second Clasp to the Territorial Efficiency Decoration.—Major (Honorary Lieutenant-Colonel) T. C. McKenzie, T.D., R.A.M.C., retired.

First Clasp to the Territorial Efficiency Decoration.—Lieutenant-Colonel A. Wilcox, T.D., and Majors (Honorary Lieutenant-Colonels) T. C. McKenzie, T.D., retired, and Sir J. C. Nicholson, R.A.M.C.

Territorial Efficiency Decoration.—Colonel G. O. Montgomery, retired. Lieutenant-Colonel T. F. Redman, Majors (Honorary Lieutenant-Colonels) W. I. Gordon and Sir J. C. Nicholson, Majors E. S. Curtiss, D. B. McVittie, E. L. Simpson (retired), and A. J. Thomson, and Captain (Acting Lieutenant-Colonel) H. K. Meller, M.B.E. (now A.E.R.), R.A.M.C.

INFECTIOUS DISEASES AND VITAL STATISTICS

Summary for British Isles for week ending **February 19** (No. 7) and corresponding week 1954.

Figures of *cases* are for the countries shown and London administrative county. Figures of *deaths* and *births* are for the 160 great towns in England and Wales (London included), London administrative county, the 17 principal towns in Scotland, the 10 principal towns in Northern Ireland, and the 14 principal towns in Eire.

A blank space denotes disease not notifiable or no return available.

The table is based on information supplied by the Registrars-General of England and Wales, Scotland, N. Ireland, and Eire, the Ministry of Health and Local Government of N. Ireland, and the Department of Health of Eire.

CASES in Countries and London	1955 Eng. & Wales	1955 Lond.	1955 Scot.	1955 N. Ire.	1955 Eire	1954 Eng. & Wales	1954 Lond.	1954 Scot.	1954 N. Ire.	1954 Eire
Diphtheria	16	0	6	0	1	19	1	5	0	1
Dysentery	1,145	55	285	4	1	754	90	184	9	7
Encephalitis, acute	3	0	0	0		3	0	0	1	
Enteric fever:										
Typhoid	4	0	0	0		1	0	1	0	2
Paratyphoid	3	0	3	0		10	0	3	0	
Food-poisoning	112	16		0		224	18		0	
Infective enteritis or diarrhoea under 2 years				12	15				11	28
Measles*	19,976	2402	236	648	68	1,944	29	65	10	291
Meningococcal infection	43	8	19	5		51	8	17	2	4
Ophthalmia neonatorum	48	11	1	0		20	2	4	0	
Pneumonia†	1,020	80	267	47	3	932	48	262	4	1
Poliomyelitis, acute:										
Paralytic	13	2	2	0	2	15	0	4	0	4
Non-paralytic	8	1				4	0			
Puerperal fever§	213	52	8	1		225	35	4	1	
Scarlet fever	682	28	75	52	27	1,223	54	187	35	24
Tuberculosis:										
Respiratory	713	68	128	28		792	98	174	33	
Non-respiratory	116	7	17	8		127	8	18	7	
Whooping-cough	1,910	151	192	42	27	2,099	71	354	50	61

DEATHS in Great Towns	1955 Eng. & Wales	1955 Lond.	1955 Scot.	1955 N. Ire.	1955 Eire	1954 Eng. & Wales	1954 Lond.	1954 Scot.	1954 N. Ire.	1954 Eire
Diphtheria	1	0	0	0	0	0	0	0	0	1
Dysentery	0	0		0		0	0		0	
Encephalitis, acute		0			0		0			0
Enteric fever	0	0	0	0		0	0	0	0	
Infective enteritis or diarrhoea under 2 years	12	0	3	0	2	12	0	4	0	2
Influenza	82	19	7	0	5	45	2	2	0	2
Measles		1	1	1	0		0	0	0	1
Meningococcal infection		0	0				2	0		
Pneumonia	357	73	32	17	14	421	53	29	8	13
Poliomyelitis, acute	1	0			0	1	0			0
Scarlet fever		0	0	0	0		0	0	0	0
Tuberculosis:										
Respiratory	104	17	19	4	4	126	20	19	1	7
Non-respiratory		1	0	1	0		0	0	1	1
Whooping-cough	2	0	0	0	0	3	0	0	0	1
Deaths 0–1 year	247	32	38	11	18	258	25	48	5	23
Deaths (excluding stillbirths)	6,894	1085	788	181	219	7,161	1020	715	123	222
LIVE BIRTHS	7,051	1044	927	211	360	8,072	1136	963	251	460
STILLBIRTHS	185	22	27			204	23	30		

* Measles not notifiable in Scotland, whence returns are approximate.
† Includes primary and influenzal pneumonia.
§ Includes puerperal pyrexia.

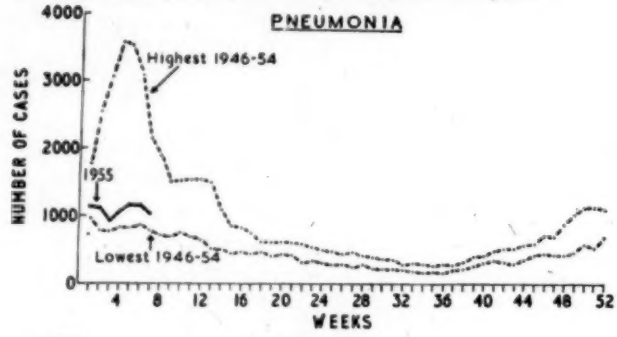
Vital Statistics

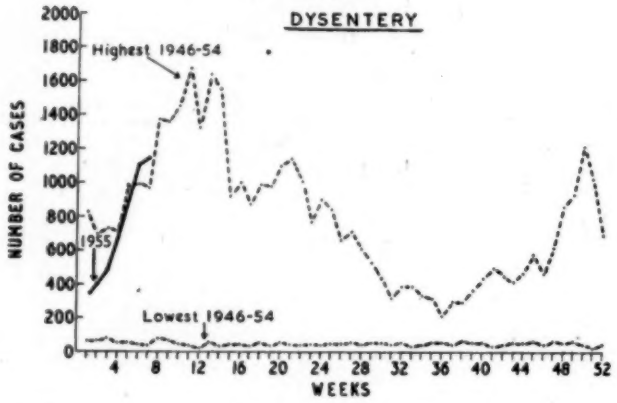
Diphtheria Low Record

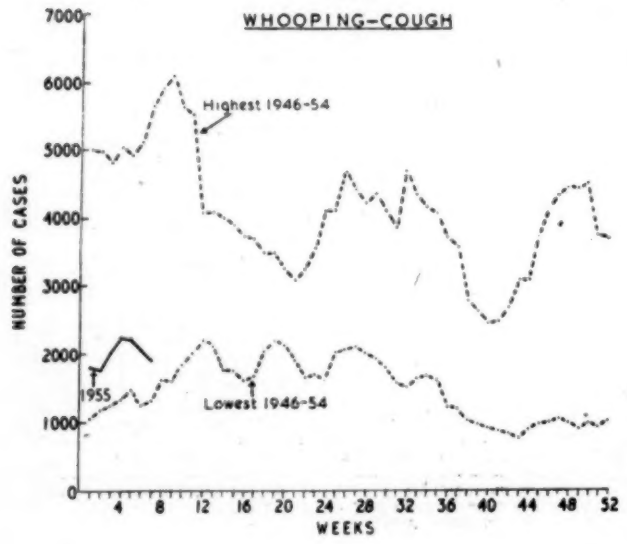
In England and Wales in 1954 only 9 deaths from diphtheria were reported. This provisional figure may be compared with 23 for 1953 and 722 for 1945. The provisional figure of corrected notifications was 182, also a record low figure. In 1953 they numbered 266, and in 1945, 18,596.

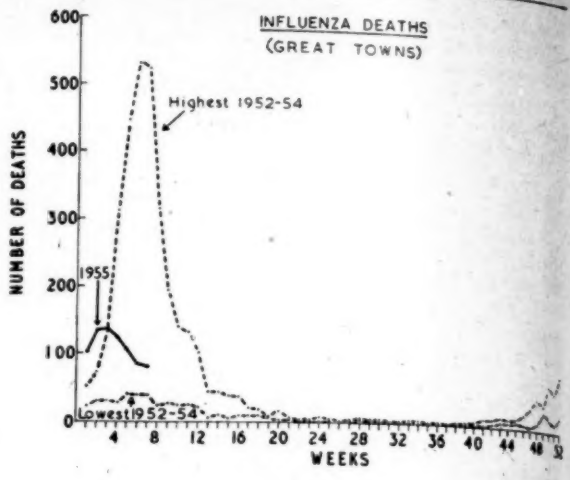
Graphs of Infectious Diseases

The graphs below show the uncorrected numbers of cases (deaths for influenza) of certain diseases notified weekly in England and Wales (great towns for influenza). Highest and lowest figures reported in each week during the nine years 1946–54 (influenza, 1952–4) are shown thus ------, the figures for 1955 thus ———. Except for the curves showing notifications in 1955, the graphs were prepared at the Department of Medical Statistics and Epidemiology, London School of Hygiene and Tropical Medicine.









Infectious Diseases

The largest fluctuations in the trends of the notifications of infectious diseases in England and Wales during the week ending February 19 were an increase of 1,613 for measles, from 18,363 to 19,976, and decreases of 155 for whooping-cough, from 2,065 to 1,910, 136 for acute pneumonia from 1,156 to 1,020, and 64 for scarlet fever, from 746 to 682.

The largest increases in the incidence of measles were 457 in London, from 1,945 to 2,402, 379 in Kent, from 675 to 1,054, 245 in Warwickshire, from 815 to 1,060, 243 in Derbyshire, from 778 to 1,021, and 111 in Nottinghamshire, from 975 to 1,086. In contrast to the general rise, two large falls in the incidence of measles were reported—of 234 in Lancashire, from 3,277 to 3,043, and 173 in Yorkshire West Riding, from 2,871 to 2,698. The largest fluctuation in the trends of whooping-cough was a fall of 73 in Lancashire, from 243 to 170. The only variations of any size in the incidence of scarlet fever were decreases of 26 in London, from 54 to 28, and 21 in Yorkshire West Riding, from 77 to 56. 16 cases of diphtheria were notified, being 2 more than in the preceding week. Half of the cases were notified in three cities, Manchester C.B. 3, Kingston-upon-Hull C.B. 3, and Middlesbrough C.B. 2.

The 3 cases of paratyphoid fever were all notified in Birmingham C.B.

21 cases of acute poliomyelitis were notified. These cases were 4 more for paralytic and 1 more for non-paralytic cases than in the preceding week. The areas with multiple cases were London 3, Lancashire 3, Devonshire 2, and Nottinghamshire 2.

1,145 cases of dysentery, 35 more than in the preceding week, were notified. The largest centres of infection were Lancashire 445 (Blackpool C.B. 122, Oldham C.B. 106, Blackburn C.B. 72, Manchester C.B. 52, Liverpool C.B. 12, Lytham St. Anne's M.B. 11, Darwen M.B. 10), Durham 71 (Easington R.D. 16), Yorkshire West Riding 60 (Leeds C.B. 26, Sheffield C.B. 17), Northamptonshire 60 (Northampton C.B. 46), London 55 (Southwark 12), Nottinghamshire 46 (East Retford M.B. 27, Mansfield M.B. 10), Northumberland 45 (Newcastle-upon-Tyne C.B. 19), Glamorganshire 44 (Swansea C.B. 16, Cardiff C.B. 13), Leicestershire 42 (Leicester C.B. 21, Wigston U.D. 18), Yorkshire North Riding 36 (Middlesbrough C.B. 35), Norfolk 35 (Norwich C.B. 15), Cardiganshire 27 (Lampeter M.B. 25), Lincolnshire 25 (Scunthorpe M.B. 24), and Staffordshire 23 (Burton-upon-Trent C.B. 12).

Week Ending February 26

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 675, whooping-cough 1,678, diphtheria 13, measles 23,700, acute pneumonia 924, acute poliomyelitis 21, dysentery 1,237, paratyphoid fever 3, and typhoid fever 4.

Medical News

Endocrine Unit at New End Hospital.—The new department of endocrinology at New End Hospital, Hampstead, was opened on March 2 by the DUKE OF EDINBURGH. The chair was taken by the Hon. JOHN FREMANTLE, chairman of the North-west Metropolitan Regional Hospital Board, by whom the first extension of the department was begun two years ago with the initiation of the radio-isotope laboratory. Among those present were the MINISTER OF HEALTH; Sir THOMAS DUNHILL, founder of the L.C.C. Thyroid Clinic, from which the new department has developed; and the representative of Organon Laboratories, Ltd., who have provided a generous annual subsidy for the research work of the department. The Duke of Edinburgh was conducted through the new premises, housed in the shell of the old maternity unit, by Mr. J. E. PIERCY, the surgeon-superintendent of the hospital, and Dr. RAYMOND GREENE, senior physician to the hospital and the originator of the extension plan. The new department includes 26 beds, a new biochemical laboratory, an extended and improved radio-isotope laboratory, an out-patient department, and a new operating theatre, all in convenient juxtaposition. The transmutation of the thyroid clinic into a complete endocrinological research unit has been made possible by a generous gift of some £50,000 from King Edward's Hospital Fund.

Eli Lilly and Lederle Travelling Fellowships.—The Medical Research Council invites applications *not later than March 28* for these travelling fellowships in medicine for the academic year 1955–6. The fellowships are for graduates resident in Britain who are likely to benefit by a period of work in the United States before taking up positions for higher teaching or research in the United Kingdom. The stipend is $2,700 per annum for a single fellow and $3,900 for a married fellow. The funds for the fellowships have been generously provided by Eli Lilly and Company, U.S.A., and the Lederle Laboratories Division of the American Cyanamid Company. Full details and forms of application from the secretary, Medical Research Council, 38, Old Queen Street, Westminster, London, S.W.1.

Professor R. V. Christie, professor of medicine at St. Bartholomew's Hospital, London, since 1938, has been appointed professor of medicine, and chairman of the department of medicine, at McGill University, Montreal. He has also been appointed physician-in-chief of the Royal Victoria Hospital, Montreal. He succeeds Professor E. F. MILLS. Born in 1902, Professor Christie graduated from Edinburgh University, continuing his studies at the Rockefeller Institute for Medical Research, New York, Freiburg University, and McGill University, where he is now going. He was Goulstonian lecturer to the Royal College of Physicians in 1943, and is a Censor of the College. He is also a member of the Senate of London University. Professor Christie is perhaps best known to readers of the *Journal* for his publications on the antibiotic treatment of subacute bacterial endocarditis. He expects to take up his appointment in Montreal in the autumn.

Chairs of Medicine and Surgery at Melbourne.—Melbourne University has appointed two doctors from London to its new chairs of medicine and surgery. Dr. R. R. H. LOVELL, lecturer in medicine at St. Mary's Hospital Medical School, will be professor of medicine, and Mr. M. R. EWING, senior lecturer in surgery at the Postgraduate Medical School of London, professor of surgery. Dr. Lovell, who is 35, graduated at London University and was a Naval surgeon during the war. Mr. Ewing, aged 42, also a Naval surgeon in the war, held a British-American Exchange Scholarship at the Memorial Hospital, New York, in 1950–1, and was a Hunterian professor of the Royal College of Surgeons in 1950, when he lectured on "Villous Tumours of the Rectum."

Order of St. John.—Sir STEWART DUKE-ELDER, accompanied by the Secretary of the Order, Major J. F. C. UNDERHILL, is now on tour in the Middle East. He is looking into the possibility of restoring the Ophthalmic Hospital of St. John in Jerusalem and the establishment, somewhere in the Middle East, of a research institute for the study of trachoma. It is understood that the latter would be administered by the Order of St. John and financed by interested British firms. Sir Stewart is expected to return to London at the beginning of April.

Doctors and the Press.—Dr. H. GUY DAIN, in his capacity as chairman of the Association's Public Relations Committee, has invited representatives of the Press to attend an "exploratory meeting" on March 29 at B.M.A. House to discuss "the relations between the medical profession and the Press, particularly with reference to news from hospitals." This arises as a result of recent correspondence in the newspapers about the reporting of the Keighley and Kano conjoined twins. The Press organizations invited to send representatives to the meeting are the General Council of the Press, the Newspaper Proprietors Association, the Guild of British Newspaper Editors, the Newspaper Society, the Press Association, the Institute of Journalists, the National Union of Journalists, the Newspaper Conference, the Scottish Daily Newspapers Society, and the Scottish Newspaper Proprietors Association.

Chest Diseases Group.—The formation is announced of a clinical group called the South-West Metropolitan Region Chest Diseases Group (Eastern Area). It covers the county areas of Surrey and West Sussex, and that part of the county of London within the geographical area of the regional board. The aim of the group is to promote the study of diseases of the chest, with special reference to the problem of tuberculosis. Membership is open to all doctors in the area with an interest in chest diseases. Further details may be obtained from the honorary secretary, Dr. G. C. TAYLOR, A.S.M.O., South-West Metropolitan Regional Hospital Board, 27, Queen Anne Street, London, W.1.

Trinidad's Lepers.—Dr. ERNEST MUIR, honorary medical adviser to the British Empire Leprosy Relief Association, and Dr. SOUZA LIMA, of the World Health Organization, have been invited to visit the island of Chacachacare to report on the management of the lepers there (see *Journal*, January 15, p. 175). Dr. Muir is familiar with the local conditions, as after his retirement he worked at Chacachacare during the last world war.

Dr. E. A. Wright, experimental pathologist at the Medical Research Council's experimental radiopathology research unit at Hammersmith Hospital, has been appointed to the London University readership in pathology tenable at St. Mary's Hospital Medical School.

Professor J. Cruickshank, who retired from the chair of bacteriology at Aberdeen University last year, will receive the university's honorary degree of Doctor of Laws at the summer graduation in July.

Dr. G. W. Marsh has been awarded the Polar Medal. He was Base leader and medical officer at Hope Bay, 1952–3, while a member of the Falkland Islands Dependencies Survey.

COMING EVENTS

Christian Medical Fellowship.—Mr. ARNOLD S. ALDIS, F.R.C.S., will speak on "The Extent of Medical Responsibility" at the Royal Empire Society, Northumberland Avenue, London, W.C.2, at 7.45 p.m. on March 17.

Airborne Medical Society.—The annual dinner of the society will be held at the Royal College of Surgeons, Lincoln's Inn Fields, on March 18 at 7.30 p.m. Details from the secretary, Dr. J. S. BINNING, Medical Department, Marylebone Station, London, N.W.1.

Institute of Psychiatry.—A series of postgraduate courses in psychiatry will be held at the Maudsley Hospital, Denmark Hill, London, S.E.5, starting on April 4.

Central Council for the Care of Cripples.—Conference on "The Well-being of the Disabled" at Leeds University, April 12–14. Details from the council, 34, Eccleston Square, London, S.W.1.

Brompton Hospital Association.—Dr. G. E. BEAUMONT will preside over the dinner of this association on April 15 at the Waldorf Hotel at 7.15 for 8 p.m. The cost of the dinner will be £1 5s. (excluding drinks). Application should be made to Dr. A. F. FOSTER-CARTER, Brompton Hospital, London, S.W.3.

Society for General Microbiology.—Twentieth general meeting at the Royal Institution, London, April 18–20. On April 18 at 6 p.m. Professor C. B. VAN NIEL will deliver the second Marjory Stephenson Memorial Lecture on "Natural Selection in the Microbial World." On April 19 and 20 there will be a symposium on "Mechanisms of Microbial Pathogenicity."

Postgraduate Course for General Practitioners.—A full-time course at the Cardiff Royal Infirmary and Llandough Hospital, April 25–May 7, has been arranged by the Welsh National School of Medicine. Details from the secretary of the school, 34, Newport Road, Cardiff.

SOCIETIES AND LECTURES

A fee is charged or a ticket is required for attending lectures marked ●. Application should be made first to the institution concerned.

Monday, March 14

BRITISH PSYCHO-ANALYTICAL SOCIETY.—At Royal Society of Medicine, 8.30 p.m., Ernest Jones Lecture by Mr. J. Wisdom: Logic of the Unconscious.

MEDICAL SOCIETY OF LONDON.—8.30 p.m., clinico-pathological meeting.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.—7.30 p.m., Dr. G. Brownlee: The Attack on the Tubercle Bacillus.

UNIVERSITY COLLEGE LONDON: DEPARTMENT OF BIOCHEMISTRY.—At Physiology Theatre, 4.45 p.m., Dr. Joseph Needham, F.R.S.: New Light on Physico-chemical Aspects of Morphogenesis.

Tuesday, March 15

CHADWICK TRUST.—At Royal Society of Tropical Medicine and Hygiene, 5.30 p.m., Professor E. J. King, Ph.D., D.Sc.: Silicosis.

ILFORD MEDICAL SOCIETY.—At King George Hospital, Ilford, 8.45 p.m., Professor W. C. W. Nixon and Dr. Shila G. Ransom: Training for Childbirth.

INSTITUTE OF DERMATOLOGY.—5.30 p.m., Dr. A. D. Porter: Actinic Eruptions.

SOUTH-WEST LONDON MEDICAL SOCIETY.—At Bolingbroke Hospital, 8.30 p.m., Mr. E. G. Muir: Abdominal Emergencies.

WEST END HOSPITAL FOR NEUROLOGY AND NEUROSURGERY.—5.30 p.m., Mr. J. Minton: Ocular Manifestations in Clinical Neurology (Part II).

Wednesday, March 16

HYPNOTHERAPY GROUP.—At Royal Society of Medicine, 8 p.m., Dr. J. A. Hadfield: Place of Suggestion in Analytic Treatment.

INSTITUTE OF DERMATOLOGY.—5.30 p.m., Dr. J. O. Oliver: Allergy and Immunity in Skin Diseases.

INSTITUTE OF UROLOGY.—4.30 for 5 p.m., Mr. J. F. Barrington: Indications for Treatment in Enlarged Prostate.

LONDON UNIVERSITY.—At Meyerstein Lecture Theatre, Westminster Medical School, 5.30 p.m., special university lecture in biochemistry by Academician W. A. Engelhardt (Moscow): Mechano-chemistry of Muscle.

MIDLAND MEDICAL SOCIETY.—At Birmingham Medical Institute, 154, Great Charles Street, 8.15 p.m., Professor J. H. Dible: Some Pathological Observations on Peripheral Vascular Disorders

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—5 p.m., Weild Lecture by Professor R. McWhirter: Breast Cancer.

ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE.—3.30 p.m., Dr. J. Greenwood Wilson: Housing and Health.

ROYAL MEDICAL SOCIETY, Edinburgh.—8 p.m., annual extraordinary general meeting.

ST. MARYLEBONE HOSPITAL FOR PSYCHIATRY AND CHILD GUIDANCE.—5.30 p.m., Mr. G. C. Knight: Neurosurgical Treatment.

WELSH NATIONAL SCHOOL OF MEDICINE.—At Reardon Smith Lecture Theatre, Cardiff, 8 p.m., Fifth William Sheen Memorial Lecture by Sir Geoffrey Jefferson, F.R.S.: Aneurysms of the Cavernous Sinus.

WILLESDEN GENERAL HOSPITAL MEDICAL SOCIETY.—8.45 p.m., Presidential Address by Dr. T. Pearse Williams: Some Comments on the Colon.

Thursday, March 17

BRITISH INSTITUTE OF RADIOLOGY.—8 p.m., Mr. G. E. Flatman and Mr. R. E. Ellis, B.Sc.: Report on the Use of Convergent Beam *X*-ray Therapy at the Middlesex Hospital; Mr. K. Y. Ortan, B.A.: Rotation Therapy with the 2 meV Van Der Graaf Generator in Sheffield.

EDINBURGH CLINICAL CLUB.—At 7, Drumsheugh Gardens, 8 p.m., Dr. Alexander Joe: Poliomyelitis—Aetiology, Diagnosis, and Treatment.

LIVERPOOL MEDICAL INSTITUTION.—At Liverpool Ear, Nose, and Throat Infirmary, 3 p.m., afternoon clinical demonstration.

LONDON UNIVERSITY.—At University College Hospital Medical School, 5 p.m., special university lecture in pathology by Dr. Honor B. Fell, F.R.S.: Response of Organs in Culture to Environmental Influences.

NORTH-WESTERN TUBERCULOSIS SOCIETY.—At Clinical Theatre, Manchester Royal Infirmary, 5 p.m., Dr. L. E. Houghton: Corticotrophin in the Treatment of Pulmonary Tuberculosis.

NUFFIELD ORTHOPAEDIC CENTRE.—At Wingfield-Morris Orthopaedic Hospital, 8.30 p.m., Professor O. Scaglietti: Diagnosis and Early Treatment of Congenital Dislocation of the Hip.

ROYAL ARMY MEDICAL COLLEGE.—5 p.m., Licutenant-Colonel H. N. Stafford: Coroner's Practice and Procedure.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—5 p.m., Oliver-Sharpey Lecture by Professor W. Melville Arnott: Order and Disorder in Pulmonary Function.

ROYAL EYE HOSPITAL.—5.30 p.m., Dr. T. H. Whittington: Some Aspects of Refraction Work: (4) Effects of Lenses in Relation to Prescription and Fitting of Glasses.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.—At Royal Army Medical College, 7.30 p.m., laboratory meeting.

ST. GEORGE'S HOSPITAL MEDICAL SCHOOL.—5 p.m., Sir Paul Mallinson: psychiatry demonstration.

SOCIETY OF CHEMICAL INDUSTRY: MICROBIOLOGY GROUP.—At Medical Society of London, 6.15 p.m., Dr. M. Lumb: Lesser Known Antibiotics.

●WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—At Rembrandt Hotel, S.W., 7 for 7.30 p.m., dinner meeting. Sir John Charles: Counting the Cost.

Friday, March 18

BRITISH INSTITUTE OF RADIOLOGY.—5 p.m., meeting of medical members.

FACULTY OF RADIOLOGISTS.—At Royal College of Surgeons of England, 5 p.m., Radiotherapy Section Meeting. Mr. G. W. Blomfield: An Evaluation of the Clinical Results in Two Million Volt *X*-ray Therapy.

●INSTITUTE OF DERMATOLOGY.—5.30 p.m., clinical demonstration by Dr. F. R. Bettley.

INSTITUTE OF DISEASES OF THE CHEST.—5 p.m., clinical demonstration by Dr. J. Smart: Bronchitis.

POSTGRADUATE MEDICAL SCHOOL OF LONDON.—(1) 2 p.m., Mr. R. S. Murley: Carcinoma of the Female Breast, with Especial Reference to the Evaluation of the Results of Treatment. (2) 4 p.m., Dr. R. A. J. Asher: Medical Uses of Hypnotism.

●ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—5 p.m., Dr. J. H. Hutchison: Some New Diseases in Paediatrics.

SOCIETY OF CHEMICAL INDUSTRY: FINE CHEMICALS GROUP.—At Westminster Medical School, 6 p.m., discussion to be introduced by Dr. A. Lawson, Dr. J. H. Wilkinson, Professor N. F. Maclagan, and Dr. I. C. Gilliland: Chemical Aspects of Thyrotoxicosis.

Saturday, March 19

BIOCHEMICAL SOCIETY.—At University College London, annual general meeting, followed by scientific papers.

CAMBRIDGE UNIVERSITY MEDICAL SCHOOL.—10.30 a.m., symposium: Cardiovascular Diseases.

●ST. STEPHEN'S HOSPITAL.—At Rheumatism Unit, Fulham Road, S.W., March 19 and 20, 10 a.m., each day, concentrated week-end course in the "Rheumatic Diseases."

APPOINTMENTS

CAMERON, ALICK, M.D., Deputy Medical Officer of Health for the Urban Disricts of Sevenoaks, Southborough and Tonbridge and the Rural Districts of Sevenoaks and Tonbridge; Clinical Assistant, Ophthalmic Department, Bromley Hospital.

GRIFFITH, A. H., M.B., B.S., D.P.H., Senior Medical Officer, Cardiff City Council.

LIVERPOOL REGIONAL HOSPITAL BOARD.—P. D. Kelsall, M.B., Ch.B., F.F.A. R.C.S., D.A., Consultant Anaesthetist, Southport, Ormskirk, and North Liverpool areas.

WYNN-WILLIAMS, DAVID, M.S., F.R.C.S., Consultant Plastic Surgeon at Nottingham and Derby.

BIRTHS, MARRIAGES, AND DEATHS

BIRTHS

Bisset.—On March 5, 1955, to Dr. Sheona (formerly Lamont), wife of Dr. H. W. Bisset, of West Hartlepool, a brother for Christine.

Jeffs.—On February 26, 1955, at Lewisham Hospital, London, S.E., to Doris (formerly Rowland), wife of Harry G. Jeffs, M.B., B.S., a sister for Carolyn Jane—Angela Gail.

Moodie.—On March 1, 1955, to Barbara (formerly Jeffery), wife of Dr. G. Moodie, of Worksop, Notts, a daughter.

DEATHS

Anthony.—On February 22, 1955, at his home, Wilfred Mark Anthony, M.B., B.S., of Church Hill, Walthamstow, London, E.

Ashcroft.—On February 26, 1955, at 25, Oakfield Drive, Upton by Chester, Cheshire, Edward Maynard Ashcroft, M.B., Ch.B., D.P.H., late of Levenshulme, Manchester, and Heaton Moor, Stockport, aged 79.

Browne.—On February 25, 1955, at Northampton, Benjamin Sidney Browne, L.R.C.P.&S.Ed., late of Alcester, Warwicks, and Cleeve Hill, Glos, aged 91.

Campbell.—On February 23, 1955, at the Royal Northern Infirmary, Inverness, Ranald Douglas Campbell, D.S.O., M.B., Ch.B.

Glaister.—On February 11, 1955, at Chichester, Joseph Glaister, M.B., Ch.B.

Liang.—On November 3, 1954, at Tokyo, Japan, while on his way to the U.S.A., Pow Kan Liang, M.B., F.R.C.S.Ed.

Mitton.—On February 19, 1955, in a nursing home, Cheshire, Norman Vernon Mitton, M.B., Ch.B., formerly of Savile Grange, and 10, Lord Street, Halifax, Yorks, aged 67.

Nicholson.—On February 14, 1955, at 22, Balliol House, Manor Fields, Putney, London, S.W., John Archibald Nicholson, *M.C.*, M.B., Ch.B., aged 64.

Peacock.—On February 16, 1955, in a nursing home, Frinton, Essex, William Ernest Peacock, M.D.

Simpson.—On February 2, 1955, Cecil Butler Simpson, M.R.C.S., L.R.C.P., late of Filey, Yorks, aged 81.

Spurway.—On February 11, 1955, John Spurway, M.B., C.M., of Bredon, near Tewkesbury, aged 85.

Wareham.—On February 4, 1955, in hospital, Harold Edgar Wareham, M.B., Ch.B., of 16, Merchiston Avenue, Edinburgh, aged 83.

Whitehead.—On February 10, 1955, Brian Whitehead, *M.C.*, M.R.C.S., L.R.C.P., of Hamilton House, Downton, Salisbury, Wilts.

Widdowson.—On February 20, 1955, at Odiham, Hants, Eric Arthur Widdowson, D.S.O., M.B., Ch.B.

Any Questions ?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Side-effects of Dexamphetamine

Q.—*What are the side-effects from the use of dexamphetamine sulphate or the cumulative ill-effects from the prolonged use of this drug?*

A.—The common side-effects of dexamphetamine are restlessness, insomnia, and lack of appetite; palpitation and extrasystoles occasionally occur, as do dryness of the mouth and flatulence; a persistent rise in blood pressure is very rare. Aberrations of behaviour have occasionally been reported even after moderate doses taken by susceptible persons. An amphetamine habit may sometimes develop in unstable individuals who have come to rely on the drug to restore confidence in the same way as others resort to alcohol when they have to face a difficult situation, but there is no evidence that true drug addiction develops to it, as tolerance, craving, and the withdrawal syndrome are not associated with its use. There is no risk of cumulative ill-effects resulting from even the prolonged administration of dexamphetamine in therapeutic doses.

Premature Detumescence

Q.—*A middle-aged man, happily married, complains that during the last few years, during intercourse, detumescence of the penis tends increasingly to occur before ejaculation, and that he has to satisfy his wife's orgasm by manual stimulation of her clitoris. Intercourse has rarely been more frequent than once a month, and of late years the interval is increasing. Would a hormone such as testosterone propionate help to correct matters, and would there be any risks associated with its exhibition?*

A.—This man's condition is most probably due to psychological causes, in which case testosterone propionate would be ineffective. It might, however, be tried in doses of 50 mg. twice a week; failure of a response within two weeks would confirm the diagnosis of psychogenic impotence. There are no risks attached to its administration, but should it be effective it is advisable to continue maintenance therapy with methyl testosterone in doses of 25 mg. daily by mouth.

Cellular Therapy

Q.—*What is the Niehans system of treatment? Recently there have been several references to it in the lay press. How successful is it?*

A.—A book entitled *Die Zellulartherapie* (*Cellular Therapy*) has recently been published by Dr. Paul Niehans, together with 21 other contributors, from the house of Urban and Schwarzenberg (Munich, 1954). Only a review and a publisher's note on this book have been seen by the writer, but Dr. Niehans has also published a brochure on the "Biological Treatment of Diseased Organs in Human Beings and Animals" (Schlaefli, Interlaken, 1948) which has been studied. Dr. Niehans claims that degenerating tissues regain their efficiency when fresh cells are administered. Thus heart muscle cells are injected in myocardial degeneration, thyroid, gonadal, and kidney cells in gout, and cells from hypothalamic centres in hypothalamic obesity. Two injections of ovarian cell cultures are said to have imbued a 79-year-old lady with new life. The cells are taken from healthy foetal, young, or fully developed human beings or animals, and they are usually injected intramuscularly, though sometimes they are injected near the diseased organ. It is claimed that the cells migrate and can arrive at their place of destination, presumably the diseased organ.

It must be confessed that the evidence presented in Dr. Niehans's brochure is of the testimonial type and unconvincing. Moreover, Professor Charles Rob in a recent lecture on the preservation and transplantation of human tissues[1] stated, "If one accepts the definition that a graft is a transplant of tissue which forms a permanent living union with the host, then one must conclude that—with the certain exception of identical twins and the possible exception of the cornea—a successful homologous graft has yet to be achieved." Dr. Niehans would counter this with the statement that it is possible to graft heterologous tissues into the embryo and that it might therefore be possible to graft embryonic tissues in the adult, though Burnet's review of the subject[2] makes this appear unlikely. Further theoretical objections are that if human tissues are used there will be a risk of homologous serum jaundice, and whatever tissues are used the treatment is likely to be expensive. Nevertheless, Dr. Niehans's theories cannot be dismissed out of hand, for recently some striking results have been obtained by Leon Jacobson, Lorenz, and others, in the protection of mice from anaemia and leukaemia after irradiation by the injection of emulsions of spleen, bone marrow, embryonic and other tissues (Ciba Foundation Symposium on Leukaemia Research, London, 1954). It is not yet decided whether the effect is a cellular or a humoral one, or whether it would be applicable to man.

REFERENCES

1 *Lancet*, 1954, 2, 255.
2 *British Medical Journal*, 1954, 2, 189

Diet in Diabetes

Q.—*Ten minutes with the literature on diabetes mellitus reveals great diversity of teaching on what is best in dieting. The wide differences between what is thought and what is done still further complicate the position. Many diet sheets and cards, sedulously carried around by our patients, and a good many pages of the well-beloved textbooks are quite impracticable. What then is the fundamental principle which should guide us in framing a diet for a diabetic? What do we hope to attain by restricting carbohydrate, and what are the fundamental considerations which should govern the prescription of a diet for a diabetic?*

A.—A raised blood sugar is the cardinal abnormality in diabetes mellitus, and restriction of the carbohydrate in the diet is the common-sense answer to this change. Complete exclusion is not required. Carbohydrate is needed to make any diet palatable, to supply calories, and to facilitate the action of any insulin that may be used. After the introduction of insulin, some workers suggested that restriction of carbohydrate was unnecessary and the use of a "free diet" was advocated, particularly in children. Such advice would seem to be founded on false principles. A diabetic can no longer produce varying amounts of insulin for himself, according to what he eats. Instead, he gives himself a fixed amount of insulin each day, and so, to maintain his blood sugar within the normal range, he requires a fixed amount of carbohydrate.

With the passage of time it has become possible to compare the progress of groups of patients on fixed and free diets, and in every case those patients whose carbohydrate has been restricted have shown fewer bouts of ketosis and less arteriosclerotic complications than those who have eaten as they pleased.

The diet in diabetes should maintain the patient's weight at a few pounds below the average for his height and age and enable him to do a full day's work, whether this be in an office or a coal mine. On no account must a diabetic

be allowed to get fat. A daily ration of carbohydrate will be fixed between 150 and 200 grammes, depending on the total calorie value of the diet required. Fat and protein will be given in quantities to supply the calories required and to make the diet appetizing.

Fat patients with glycosuria are the exception to these rules. They require a drastic reduction in their weight and they should be given a diet containing only 800 or 1,000 calories with, in each case, 100 grammes of carbohydrate.

Whatever diet is prescribed, it should be "tailored" to match the patient's palate as far as possible, or he will not take it for long. Eight ounces (230 g.) of potatoes at one meal may appal a child patient and yet be taken with relish by a dock labourer.

Vincent's Organisms in the Mouth

Q.—*I have had several reports back as positive for Vincent's organisms, and the patients' symptoms have settled without any therapy. Are these examples of carriers, and, if so, should any treatment be commenced? Are these organisms pathogenic, or do they invade the damaged tissue secondarily?*

A.—This question is difficult to answer without knowing what the patients' symptoms were and what lesion was present. Vincent's infection takes the form of an ulcer of either the throat or the gingival margin, and only in material from such a lesion are the organisms present in such numbers as to be confidently identifiable. It must be remembered that this identification is purely morphological (that is, by film, not culture) and it suffers from the defect of most such methods that a distinction from other closely similar micro-organisms is difficult to make without supporting evidence. There are many spirochaetes in the mouth indistinguishable from *Treponema vincenti*, and bacilli resembling Vincent's fusiform bacillus are not uncommon. In the absence of an ulcerative lesion their presence can be disregarded.

Vincent's organisms are unquestionably pathogenic: the fusiform bacillus belongs to a genus other members of which produce lesions elsewhere characterized by necrosis, some of which can be of a very serious nature. Many conditions predispose to gingivitis, and it has been suggested that a vitamin deficiency may underlie Vincent's infection, but the occurrence of the infection, sometimes in epidemic form, among perfectly healthy and well-nourished people strongly suggests that this is not a necessary factor.

Slippery Elm

Q.—*Is slippery elm safe to use for the induction of labour?*

A.—Slippery elm is the bark of a tree and is only 1 to 4 mm. in thickness, so that it is obtained in flat strips which are poorly shaped for insertion into the cervix. Indeed, they may take the form of rather sharp splinters. Its reputation as an abortifacient rests on its hygroscopic property: if it is inserted into the cervical canal it swells by taking in fluid and thus causes the cervix to dilate. It is this property which also makes it difficult to sterilize. Slippery elm is therefore neither convenient nor safe to use for inducing abortion and labour.

If something of this kind is required then the obvious choice is laminaria tents, which consist of sea tangle (a kind of seaweed) and which also swell when placed in contact with the moisture of the cervical canal. These are pencil shaped and the difficulty in the matter of their sterilization is overcome by the fact that they can now be purchased already sterilized, each in a sealed glass tube.

The successful use of laminaria tents necessitates a long cervix with a canal sufficiently well formed to hold them and to be stimulated by them—conditions which rarely obtain in late pregnancy, and, if they do, which usually contraindicate induction of labour. If the cervix is "ripe" for induction other methods such as rupture of the membranes are more certain and more safe. Laminaria tents are therefore most often used, either alone or in combination with another method, to induce abortion, and it is only in some special circumstances that most obstetricians would resort to them for the purpose of inducing labour.

Static Electricity and Car Sickness

Q.—*Recently I have heard it suggested that the cause of car sickness is static electricity, and that if a piece of chain earths the vehicle patients with this tendency are no longer liable to it. Can you tell me if there is any truth in this statement? I have always imagined that motion sickness was visual or inner-ear in origin.*

A.—There is no evidence that static electricity in a car predisposes to motion sickness. Though the outside of the vehicle may be affected by static electricity, the inside is not.

In aviation there is often much turbulence when an aircraft is affected by static electricity, and the turbulence is enough to account for the motion sickness, the incidence of which is usually in proportion to the turbulence. Few people are airsick when the aircraft flies above the weather, though there may be much static electricity in the clear air.

The present opinion is that the main cause of motion sickness is over-stimulation of hypersensitive labyrinths, induced by slow oscillations, resulting in vagosympathetic disturbance. Vibrations affecting the eyeball also play a part.

Fertility after Prostatectomy

Q.—*I recently examined microscopically a specimen of nocturnal emission from a patient who had transurethral prostatectomy six years ago, and I found many motile spermatozoa. Surely this is contrary to all expectations. Are such patients usually fertile?*

A.—If the vas has not been tied seminal fluid can still reach the prostatic urethra. After full prostatectomy it enters the prostatic cavity and then usually passes back by the easiest route into the bladder, whence it is subsequently voided. After transurethral resection the prostatic urethra may still be sufficiently tubular for the fluid to be ejaculated in the ordinary way by the urethra. The chance of fertility varies inversely with the amount of prostate removed at the transurethral resection.

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